BUS Transportation

DECEMBER
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BUS Transportation

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At this time of year the entire staff of BUS TRANSPORTATION takes this opportunity to extend to every member of our industry our very best wishes for a Merry Christmas and a Happy New Year.

MAIER-LAVATY tailors the trousers shown below of 55% "Dacron" and 45% wool. Matching cap of same fabric.

Greyhound bus drivers stay neater, more comfortable in lightweight trousers of DACRON and wool

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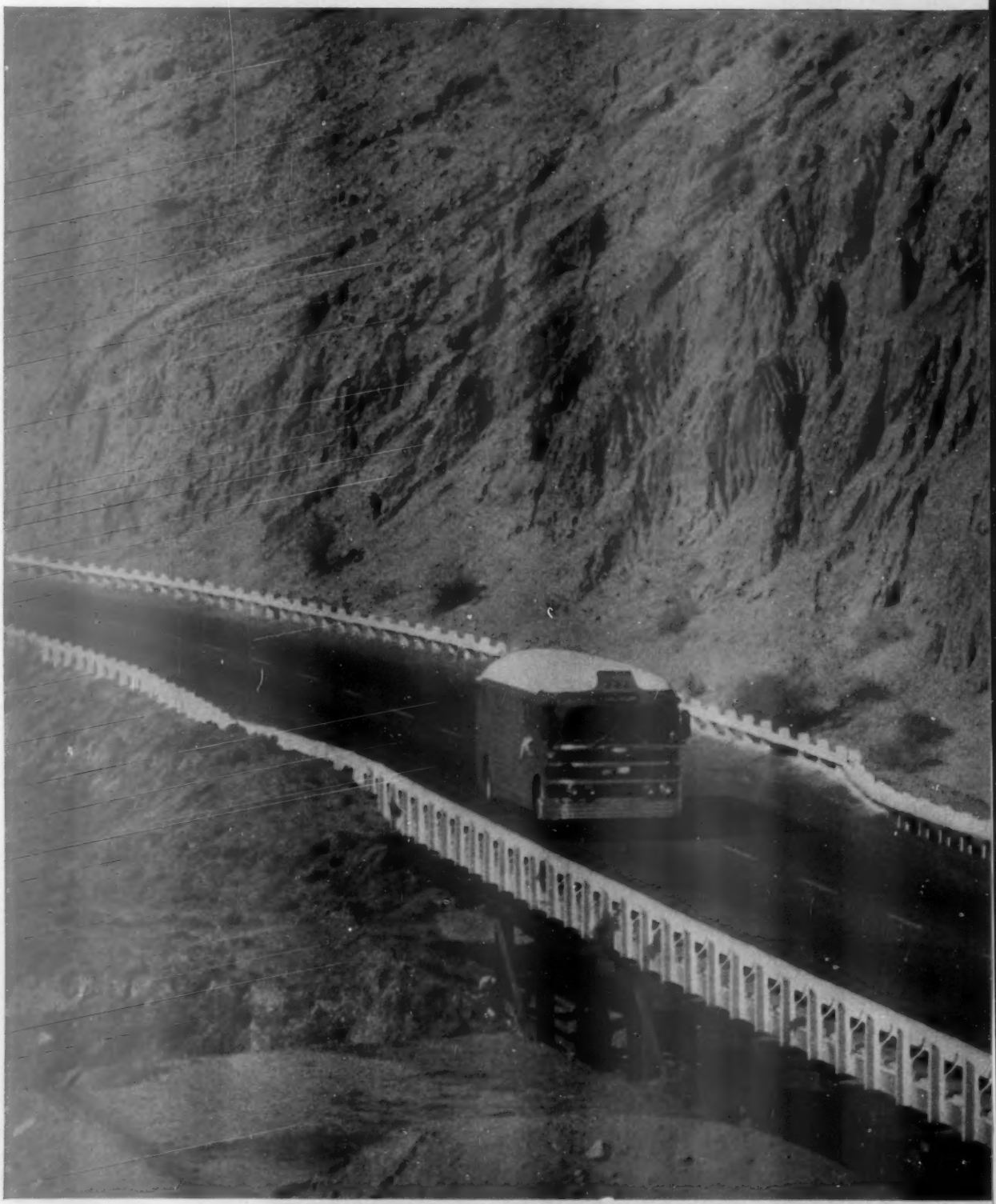
The Eyes of Transportation



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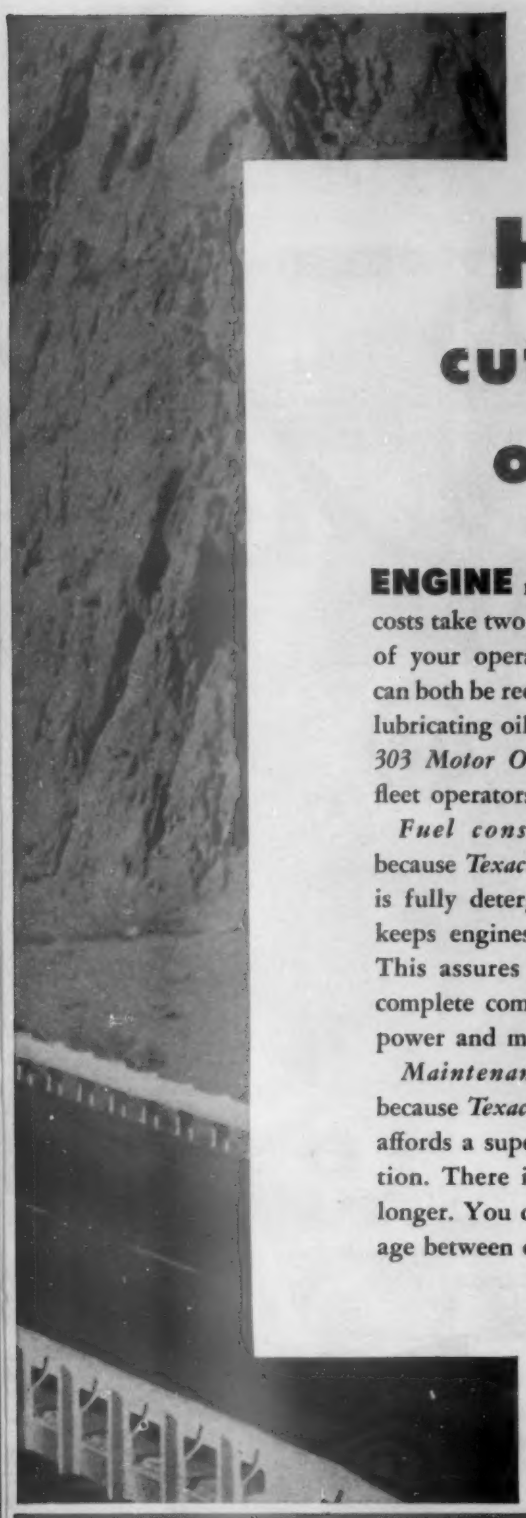

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SEE, FEEL and SAVE the difference with Grey-Rock Balanced Blocks

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See the difference in the many friction materials Grey-Rock uses. For heavy jobs—Balanced Blocks in combinations of molded materials. For light trucks—Balanced Trucksets, in distinctive woven and molded combinations, or in all-woven or all-molded sets. All engineered for each make and model.

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Feel the difference in faster, smoother brake action—minimum fade—quicker water recovery—quiet action—and good pedal feel that assures driver peace of mind. You get all the superior braking features you want and need with Grey-Rock.

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You *save* because Grey-Rock Balanced Brake Blocks give more miles between relines—longer drum life—better tire wear—less labor and downtime—all adding up to lower cost per mile. Ask your Grey-Rock jobber for the facts and figures now.

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BALANCED BRAKSET LININGS

BALANCED BRAKSETS • TRUCKSETS • BRAKE BLOCKS

VEE-LOK® CLUTCH FACINGS

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RM

RAYBESTOS-MANHATTAN, INC., Brake Linings • Brake Blocks • Clutch Facings • Industrial Rubber, Engineered Plastic, and Sintered Metal Products • Rubber Covered Equipment • Asbestos Textiles • Laundry Pads and Covers • Packings • Abrasive and Diamond Wheels • Bowling Balls

If it's marked TG* it's for REAR ENGINES

Rear engine operations create special problems met and solved by the Gates Coach Belt—the belt marked TG. This belt has been engineered *specifically* to stand up under the heavy loads imposed by start-and-stop bus operation.

TG BELTS LAST TWICE AT LONG. Actual performance records of leading transit companies *show* that Gates TG Belts have more than *twice* the service life of other belts they have used. *Double service life cuts belt costs in half.*

TG BELTS RESIST HEAT. Special rubber compounds in Gates TG Belts resist the intense heat often resulting from start-and-stop bus operation . . . heat that shortens the life of ordinary fan belts.

TG BELTS ARE OIL PROOF. Oil rots *ordinary* rubber. The same rubber compounds that make Gates TG Belts heat resistant also make them oil proof.

Without obligation, a Gates Belt Specialist—available through your Gates Jobber—will survey your needs and make cost-cutting recommendations. And your jobber will supply you promptly with the Gates Coach Belts you need. There is a Gates Jobber in every distribution center.

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Look for TG*

on the belt itself as well as on the label of every belt you buy for rear engine service. "TG" means the belt has been specifically engineered for rear engines.

*Reg. U.S. Pat. Office

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Gates Coach Belts

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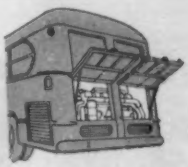

TPA

IF YOU OPERATE TRUCK-TRAILERS YOU NEED THE BEST EMERGENCY RELAY VALVE YOU CAN BUY . . .

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Midland's New Emergency Relay Valve Is Best For You Because—

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—**Operation** of Midland valve is automatic, yet *gradual.* (Automatic application of trailer brakes is *instantaneous,* of course, if trailer separates from tractor.) Valve's dual compensating feature provides automatic, gradual application of trailer brakes if pressure in the system drops below 45 p.s.i.

—**Midland** valve is designed to reduce application and release time.

—**Midland** valve safeguards against vehicle driveaway without sufficient air in the system.

3. In addition to the actual operating advantages of Midland's emergency relay valve, there's the protection and dollar value of Midland's nation-wide service and parts facilities—hundreds of Midland distributors in the United States, Canada, and abroad.

Be safe, be satisfied—specify Midland Emergency Relay Valves on all orders of new equipment.

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Your passengers *want* ADLAKE windows, because they're free from drafts, leaks, and rattles. And even your elderly lady passengers can raise and lower the windows easily! You (and your comptroller) will want ADLAKE windows because they put an end to costly maintenance.

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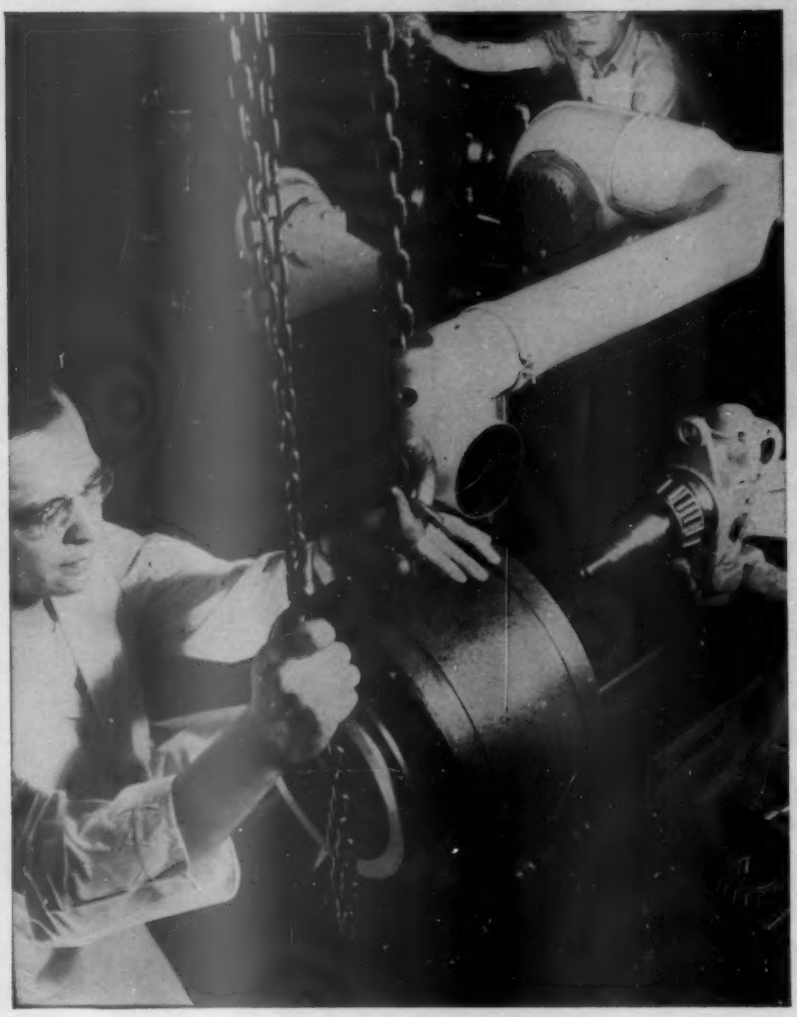


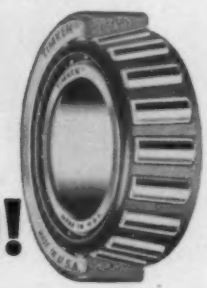
(Another reason why TIMKEN® bearings are first choice with bus manufacturers)

WORKING hand-in-hand with the bus industry solving basic design problems, we "road-test" bearing applications in our own laboratories. And we do it under simulated road conditions tougher than any encountered in actual service. Pictured here is a typical service test—running a front axle assembly under maximum driving loads. It tests the bearings themselves, compares seals and lubricants, shows bus and truck manufacturers how to get longer bearing life. It's one of the extra steps we take to make Timken® tapered roller bearings No. 1 for value.

No other bearing gives you all the advantages that Timken bearings give you: 1) advanced design, 2) rigidly controlled quality, 3) precision manufacture, 4) special analysis Timken steels. That's why Timken bearings are first choice with men who know buses best—bus manufacturers.

Why not take your cue from the manufacturers. Make sure the bearings you use for replacement carry the trade-mark "Timken". And send today for your free copy of "Timken Tapered Roller Bearings—Their Care and Maintenance". Write Dept. TB-2, The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

SINCE THEY'RE BEST WHEN THE BUS IS NEW, THEY'RE BEST FOR REPLACEMENT, TOO!



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TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ▯ AND THRUST ↔ ▯ ↔ LOADS OR ANY COMBINATION

"223,000 miles—no overhaul necessary thanks to Cities Service C-300 Motor Oil!"

North Branch Bus No. 181, a gasolene unit, has traveled 223,000 miles since the firm switched to Cities Service C-300 Motor Oil. And that 223,000 miles isn't over level terrain—not by a long shot. It's up and down the rolling hills surrounding Bloomsburg, Pa. Yet, despite this mileage and driving conditions, Bus No. 181 shows absolutely no need of overhaul and is expected to travel thousands of miles further, thanks to Cities Service C-300 Motor Oil.

Says General Manager Fred M. Endt: "That's typical of the results we've gotten with our entire fleet since we started using Cities Service products. For example, using Trojan MP 140 Gear Oil, mileage on one unit's differential has passed 243,000 miles with no overhaul needed, and what's more no overhaul is expected for some time to come.

"Service has also been excellent. Cities Service representatives, using their ingenious Power Prover, have spent many hours helping us solve our problems . . . and the help they've given has substantially reduced maintenance costs for our entire fleet."

North Branch Bus Company is one of scores of fleet operators—large and small—who report outstanding results with Cities Service products. To find out the reasons, talk with a Cities Service Representative. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

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QUALITY PETROLEUM PRODUCTS

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to all the loyal Sealed Power dealers, who have sold so many millions of Sealed Power Piston Rings—and to all the car, truck, and tractor owners who have used them during the 45 years since Sealed Power started.

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Sealed Power Piston Rings

BEST FOR RE-RING! BEST FOR RE-BORE!

In place of wasteful and uncertain crankcase-oil changing based upon mileage or hours in service, many fleet operators now use a better guide that saves them both time and money.

Now you can test used oil in minutes

IT HAS COME as something of a surprise to some maintenance men to discover that they have been throwing away hundreds of gallons of still-good oil . . . year after year. Conversely, it is quite a jolt to realize that a costly engine-repair job could have been prevented by an on-the-spot analysis that would have shown up the condition . . . in minutes!

The recommendations for oil changes issued by engine makers have always been computed on "averages" for the various classes of vehicle service. And like the "average" man on the insurance chart, the average vehicle doesn't exist in the actual fleet. Two trucks or buses of the same make and model, operating on the same job, can have quite different patterns of oil economy and engine condition. Obviously no one set of rules can apply ideally to all units of a fleet. And fortunately there is no longer any need for such generalization.

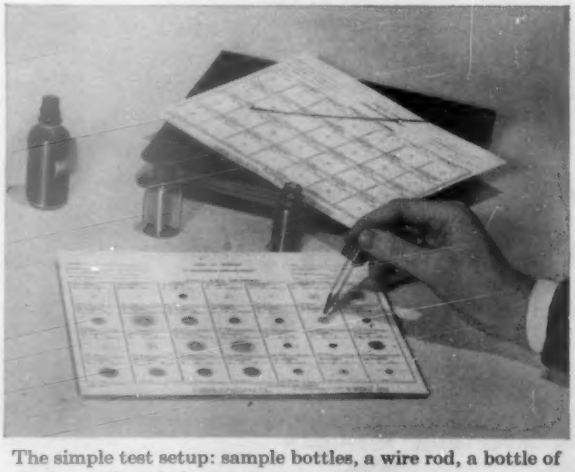
From a couple of drops of used oil, the Shell "ADC* Oilprint Analysis" provides a reliable check of oil condition, in minutes. It is very simple, and with a little practice, it tells you a lot about that oil and the engine that uses it.

What a drop of used oil shows: You place a drop of used oil on a piece of special filter paper supplied by Shell . . . let it stand a minute or two. You will then be able to *see* the following:

Water dilution: Even a tiny amount of water shows up . . . and that means not only that your oil is losing its ability to protect engine parts, but it also shows whether the water represents a normal amount of condensation or something more serious, such as an actual leakage of coolant from a faulty jacket.

Dispersancy/detergency: The same oil drop will give you a picture of how well the special additives in the oil are doing their job . . . whether or not the contaminants are being held in suspension where they do least harm . . . whether the cleansing and dispersing actions are adequate . . . whether the oil is still good.

Adulteration: The color of the oil spot will show whether too much contamination is occurring . . . and will very often point up the cause, indicating a check on



The simple test setup: sample bottles, a wire rod, a bottle of "indicator," and the permanent record card.

This single, on-the-spot sample reveals many things about an engine.

A fleet superintendent sees how easily the test is made.

injectors, nozzles, oil and air filters of diesels, or on plugs, carburetors and filters of gasoline engines.

All of the above can be learned from the single drop of oil . . . in an amazingly short time.

Alkalinity: Engine wear and engine deposits increase as the oil becomes acidic in nature due to contamination from combustion products. A special indicating fluid, developed in Shell Laboratories, tells at a glance whether oil is alkaline and still usable, or acid *and how much.*

Operators who keep an ADC Oilprint Analysis record of each vehicle generally find that the crankcase oil stands up longer than they had figured . . . a distinct saving in lubrication cost. At the same time, there is a running check on each engine that often detects impending trouble before its correction becomes costly. In this respect, the Shell ADC Oilprint Analysis qualifies definitely as one of the valuable recent tools of preventive maintenance.

If you are concerned with extending the service of crankcase oil, and with avoiding the risk of using oils loaded with contaminants, we suggest that you have one of the Shell service engineers demonstrate ADC Oilprint Analysis for you.

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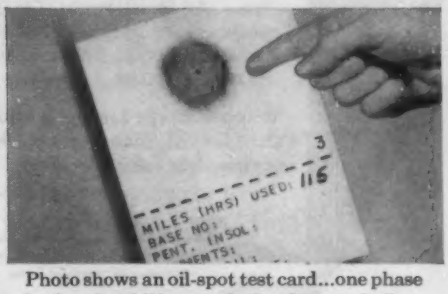
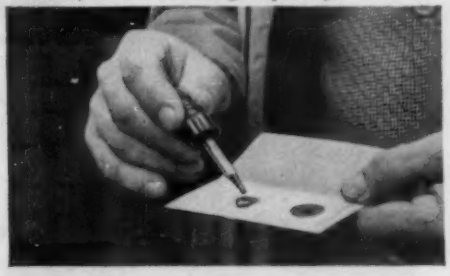


Photo shows an oil-spot test card...one phase in the visual life record of a charge of oil.

The Shell "indicator" shows acidity instantly. If spot turns red, oil is no longer fit to use, should be changed quickly.



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A McGRAW-HILL PUBLICATION **BUS Transportation**

330 WEST 42ND STREET, NEW YORK 36, N. Y., PHONE LO 4-3000

December 14, 1956

To our friends:

This is the last issue of Bus Transportation. In November this regretted news was announced to each subscriber by personal letter.

To us, the staff of this magazine, this would be a bitter event indeed if we did not have our good memories of the past, and our strong hopes for the future.

Looking backwards to the beginning of Bus Transportation in 1922, we believe there is a long record of service to an important community of American businessmen: you operators of the nation's buses, whom we have come to know so well.

In these last few weeks many of you have written to remind us of that. Over and over again you have said how the pages of Bus Transportation have helped you. And these letters have certainly helped to make the past a satisfaction to us, instead of something to be only sad about.

On top of that, we have tomorrow. All of us are taking up new jobs with a new magazine . . . with a new idea. We are joining the staff of McGraw-Hill's Fleet Owner which is broadening its view to cover the interests of all men engaged in operating automotive vehicles in fleet quantities.

So we expect to see many of you in January, in Fleet Owner. And that promises us that tomorrow may well be as rich in satisfaction . . . and in good acquaintance . . . as was yesterday.

If so, nothing could please us more.

The Editors

The Future of Transit in Large Cities

By William R. McConochie • *Chief Engineer*
Traffic and Transit Department
DeLeuw, Cather & Co.

THE URBAN TRANSPORTATION SYSTEM of the future, obviously, will vary substantially in cities of different sizes, with the more complex problems occurring in the larger cities. This article, therefore, will confine itself to cities above one million in population.

Let's also agree that when we talk about the future we mean the foreseeable future—we are not talking about space ships, flying saucers or similar fantasies.

There have been three schools of thought as to what the future transportation patterns of our cities should be in the future . . .

Group 1 envisions city of small, integrated communities in which schools, churches, shopping centers and working places will be within walking distance of home.

Group 2 believes that the automobile should, and eventually will, decentralize our cities to the point where no public transportation can exist. Every family will then own two or three automobiles for its members' daily trips around the city.

Group 3 argues that the automobile is not here to stay. They believe that in time it will choke itself out of existence. They see the day when we will all return happily to public transportation . . . city officials will heave a sigh of relief because all problems of highway needs, traffic congestion and parking demands have been disposed of for all time.

Future transit will combine many features . . .

Perhaps this is being overly optimistic, when we consider our complex transportation problems. On the other hand, there is greater effort towards finding long-range solutions than ever before in history.

Therefore, I will try to give an objective appraisal of the trend in large-city transportation development, rather than my own opinions as to what an ideal development would be.

This is not to imply that the future of transportation is beyond our power to guide— that we are being taken for a ride, so to speak. There are literally millions of keen minds at work on this problem, from the commuter who seeks the easiest route for his daily trip to the public officials who make multi-million dollar decisions on what type of transportation to buy with their communities' tax dollars.

To predict where we are going, it is well to know from whence we came. Cities were created by transportation, and they continue to live and grow by the grace of their transportation systems.

Continued on next page

It is interesting to note the part that increased speed has played in the growth of those cities.

The average person seems willing to spend about 20 minutes each way on his daily trip to and from work.

Many large cities are roughly semi-circular or fan-shaped, with the central business district at the center. In the mid-1800's when most people traveled on foot, a 20-minute walk would take them approximately one mile. The area of a semi-circle with that radius is about 1.6 square miles.

The advent of the horsecar in the 60's and 70's doubled the speed to six miles per hour, but increased to 6.3 miles the potential area conveniently accessible to a central core.

The electric streetcar again doubled the average speed of travel. It increased the area available for residential development—to approximately 25 square miles.

The automobile on typical city streets and boulevards in the 1920's again met the needs for expanding the metropolitan areas to serve growing populations.

Average speeds of 24 miles an hour enabled people to reach points as far from downtown as 8.0 miles in 20 minutes, opening up areas of 100 square miles.

Since World War II, a new area in transportation has arrived. The growing networks of urban freeways promise average speeds doubling those previously experienced, and reaching about 48 miles an hour.

That would mean that people living in an area of 400 square miles around the central district could still reach their work in about 20 minutes.

At this point, the city begins to lose its cohesion, and the centripetal force of the central core is of diminishing importance.

These speeds, remember, are available not only to people in private autos, but to passengers in express buses on the freeways, or in rapid transit trains sometimes accommodated on the same rights of way, or in subways.

The great area potentially available for urbanization resulting from these networks of freeways has given impetus to the development of residential communities, shopping centers and factory groups locating around the central nucleus.

Intra-community travel usually assumes a pattern of trips between these outlying activities, rather than the one-time sunburst pattern of trips principally to and from one dominant center.

Rapid transit cannot adequately serve this widely-dispersed pattern except that portion still focused on the central area.

Since these downtown areas generate our principal transportation problems, let's see what their growth trend has been.

Most of the satellite communities around our major cities have developed to serve new population, rather that by robbing the central core. Meanwhile, the central areas have reached stability.

The average person might think that Chicago's Loop, for example, is a much busier place today than it was in the depths of the depression. Actually, there are fewer people in the Loop at two o'clock on a normal weekday now than there were in 1935. The decrease has been from 316,000 to 304,000—or about four per cent. Since 1926 there has been a decline of half a per cent per year, indicating relative stability.

The impression of great activity in the Loop at the present time has come about through the gradually increasing use of automobiles.

In 1935, nine of every ten people in the area in mid-afternoon had arrived by public transportation, and only one in ten by automobile.

There has been a rather small change—now one in eight has arrived by automobile. But that small increase in the number of motorists has caused a great increase in congestion as well as in apparent activity.

Comparable figures hold true in other cities.

But while the growth of central business districts may have slowed down or stopped, it does not mean that such centers are dying.

As a matter of fact, you can point to the new office buildings and other commercial structures being built in nearly every large city's central area, and it might seem that we are experiencing a new area of vast expansion in our downtown districts.

In spite of this, I still say that the downtown area has just about reached a point of stabilization. To test it, let's again look at Chicago, where downtown buildings, exclusive of land, have a current value of about one billion dollars. The average building has a remaining life of perhaps 50 years.

Buildings in the area as a whole, therefore, are wearing out at the rate of approximately two percent a year, or about 20 million dollars worth.

At that rate, we should be building a new Prudential Building every other year to keep pace with attrition alone, it would seem.

In actual fact, however, vast sums are constantly being spent on air conditioning, automatic elevators and other modernization features, so that every year investment in new buildings, additions and improvements approaches the $20 million figure mentioned before.

Thus it appears that the central district in Chicago, and in other cities, is just about holding its own.

The central area right now, therefore, is typical of the central cores that our future transportation systems will serve.

This much is clear. . .

Buses will play a big part in tomorrow's cities . . .

The urban transportation of the future—public and private—will operate largely on a network of freeways and major streets. This network will interconnect residential, industrial and commercial centers, and connect each of these with the central business district.

Local buses will operate on the major streets for short-trip passengers, and express buses will operate on the freeways, where trunk line service is justified.

Rail rapid transit will operate in subways, along the streets, or on private rights of way. Its primary function will be to provide high-speed, large-capacity facilities for heavy concentrations of traffic. Most routes will serve the relatively stable central business districts, and also concentrated crosstown movements. (The proposed Bloor Street crosstown subway in Toronto illustrates such a high-capacity facility.)

The people who are most likely to work and shop in

the typical central business district will live in the outskirts of the city or in the suburbs. Relatively few will live within walking distance of major transit trunk lines.

Feeder bus service will be required, therefore, for a substantial portion of them.

There is a rapidly-growing trend, however, for people to use their own automobiles for the first part of their trips, and then transfer to a high-speed transit trunk line for the trip to the central business district or other focal center.

Such a trip exploits the advantages of both the automobile and of mass transit, while minimizing the inherent disadvantages of each. Here's why . . .

A man starts his trip in his own garage, without walking and without regard to schedules. He transfers to a trunk line at a point where he and his fellow commuters are so numerous as to justify a parking lot and a comfortable station. The bus or rail trunk line to which he transfers operates on a frequent schedule and at speeds equaling those of the private auto.

In the central business district, delivery is close to his ultimate destination.

This combination of the two modes of transportation is working successfully in Toronto in connection with the Yonge Street subway, where recent surveys showed that ten per cent of the people now using this subway formerly used their automobiles.

In Cleveland, too, there are parking lots at most stations along the Rapid Transit, as well as convenient facilities for people to be driven to the station and dropped off there. As a result, almost 20 per cent of the patrons of this system now arrive at the Rapid stations in automobiles.

In Chicago, too, parking facilities are being provided along rapid transit routes.

This pattern should be encouraged by providing adequate facilities at present and future stations of rail and express bus lines, particularly on freeways. This means building large and strategically located parking lots . . . and providing convenient facilities for "kiss-'n-ride" operations.

Under this plan, the daily commuter is driven to his transit boarding place by his wife or some other member of the household, who then retains the family car for other uses during the day. Incidentally, "kiss-'n-ride" reduces the parking space required.

We have been talking about the outlying areas. But how about the central business district itself?

Transit in the central area still must be improved . . .

Stabilizing of daytime population in the central business district still does not mean that this area can be forgotten, and time devoted exclusively to the new problems arising in the environs of your city.

When you concentrate a great number of people in one small area every day—in Chicago we have a third of a million people in one square mile at a single moment—you have a need for transportation which challenges the imagination and skill.

I doubt if anybody would claim that either public or private transportation serving the central area of his city is entirely satisfactory, requiring nothing in the future but normal maintenance and operation.

Let us assume for the moment that a network of freeways will be built in your city, and that you will be successful in your efforts to have rapid transit provided on them, either by rail or by bus. Let us further assume that everything possible has been done to stimulate park and ride operations.

Cities will still have a downtown terminal problem for their surface vehicles.

One of the boldest of all the plans to meet this problem is being considered in Fort Worth, Texas. The present downtown area would be encircled with freeways. Mammoth parking garages would be located within the freeway circle, with direct ramps to and from the freeways. Special terminals would be provided for public transit.

Eventually, all vehicles would be excluded from surface streets in the central area. People would walk to stores and office buildings from the closest of the parking garages and bus terminals. Merchandise delivery would be by tunnel.

In other cities too, vast plans are underway to try and accommodate the movement of people in and out of the downtown area.

You will gather that, in my opinion, neither public nor private transportation in the foreseeable future will have many Superman or Buck Rogers features.

Public transportation in particular will be developed from year to year on sound principles which have been advocated by transit engineers and operators for many years. There will be improvements in the art, such as more efficient signalling, improved car and bus equipment, acoustical treatment, and air conditioning.

All of these will be incorporated in public transit facilities when and as they are tried and proven.

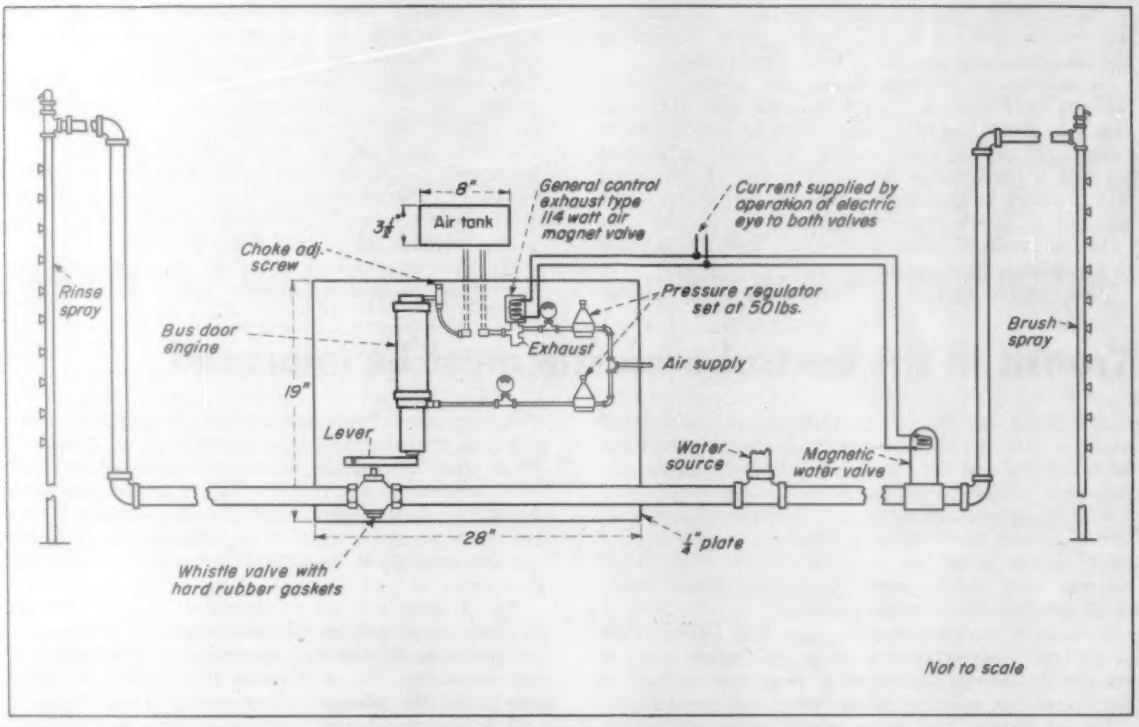
The urban transportation system of the future is not something that will come into being 20 years hence, like the blooming of a century plant.

It is evolving before our eyes today, and we have the power to shape its pattern for better or for worse.

PARKING FACILITIES like this one, at the West 98th Street station of the Cleveland Rapid Transit, should be included in all rapid transit planning, both rail and bus, the author says.

Eight Ways Your Shop Can Save

Mechanically speaking, San Diego Transit System is among the top bus companies in the nation. The reasons: Ideas like the eight presented on these four pages. They mean money and time or they make a tough job easier, proving again that in the automotive field "Bus shops are better shops." Here they tell how . . .



1. Delayed rinse conserves water, adds life to bus washer

During the critical period of water shortage in San Diego, and in line with the desire of the management to eliminate all waste of water, the mechanical and engineering departments investigated the reclaiming of water used with the bus washer. This idea was abandoned since some fresh water would be necessary for rinse on each bus and the saving in water would not warrant the cost of installing filters underground.

As an alternative, the mechanical department developed a control for delaying the rinse water until needed by a progressive application of controls.

As a bus enters the washer, the motors and water valve are actuated by an electric eye; the water solenoid valve and the rinse solenoid are energized also.

The first stage water turns on immediately with the brushes as the bus proceeds through. When the bus reaches the right position, the spray then comes on to rinse the washed surface. This delay is caused by a slow buildup of air pressure in the small tank through a choke valve at the door engine. This trapped air continues to hold the valve engaged after the bus passes the last brush and first stage controls are de-energized.

As the air bleeds past the choke valve at the door engine, the whistle valve is timed to shut off at a predetermined setting. With this, the water is used only when it is needed.

A substantial savings is evident by our water consumption for the past year as compared to previous years.

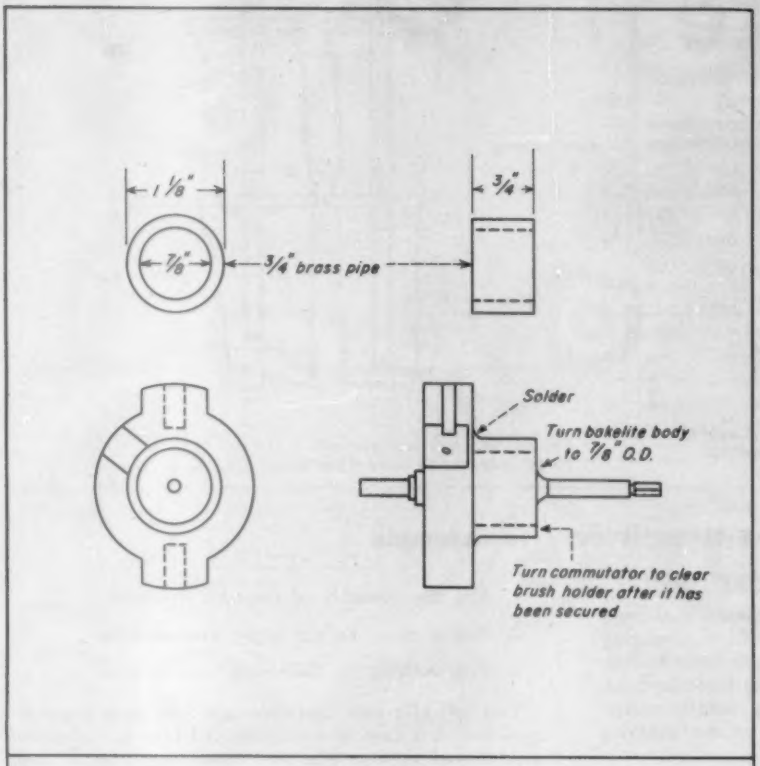
The entire cost of this unit is slightly above the cost of 1-2½ in. solenoid valve furnished by Ross & White for total control of all water.

Parts required to build this unit as shown above, at a cost to us of approximately $150, are listed as follows:

1—⅜ in. exhaust type magnet valve
1—1¼ in. 150 PSI whistle valve
1—Air tank 5 in. x 10 in.
2—Pressure regulators
1—1¼ in. solenoid valve

A power savings is also gained by a shorter operation span per bus, reducing wear on the bus washer and attaining conservation of current.

Manpower, Material and Money



2. Brass pipe commutator adds speedometer life

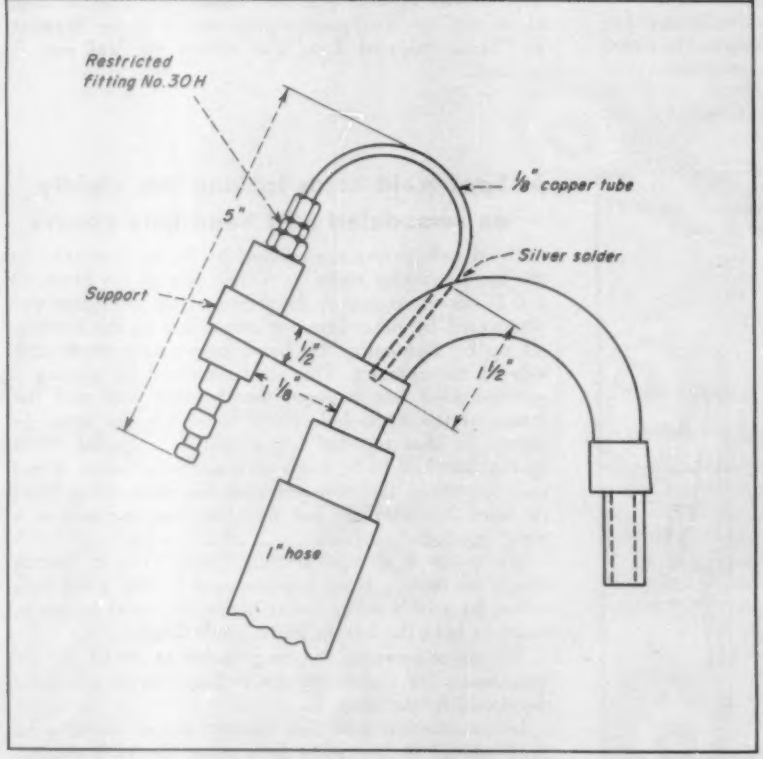
All our GMC diesel buses are equipped with electric speedometers. The sending unit, located in the engine compartment, delivers progressive impulses to actuate the speedometer when the bus is in motion.

The armature of the sending unit, as illustrated, is composed of a bakelite body, rotates on a shaft and a copper commutator and delivers current to one carbon brush, the other brush being grounded.

The commutator of this A. C. rotor #1565875 has a life span of approximately two years and costs us $9.13 each. As the commutator is made of thin copper and cannot be turned satisfactorily, it therefore would have to be abandoned.

At a cost of $1.50 per armature, the old unit is made ready for use again by installing a new commutator, made from 3/4 in. brass pipe, pressed over the turned bakelite core and soldered to the riser attached to the brushholder.

The new brass commutator will outlast the body and shaft. It does not wear as fast as copper, either.



3. $10 siphon replaces $150 boring bar vacuum unit

The conventional method of extracting cuttings from our boring bar has been with the vacuum unit known as a "sucker-outer." This has been very costly to maintain due to the too frequent replacement of armatures at a cost of $32 each.

To eliminate the use of this unit, a compressed air siphon has been installed on our unit and has replaced the vacuum control successfully.

A No. 30 restricted fitting is used in series with a 1/8 in. copper tube, using a quick disconnect air fitting to connect to our 150 lb. PSI air source. The cuttings are sucked through the pipe connected to the 1 in. hose and as a depositing container for the cuttings, the hold housing of the "sucker-outer" was used by removing the motor assembly from within and adding a series of 7/8 in. holes in the cap to the can to allow a greater escape of air to atmosphere.

This was built at a cost of $10, replacing a unit that cost $150.

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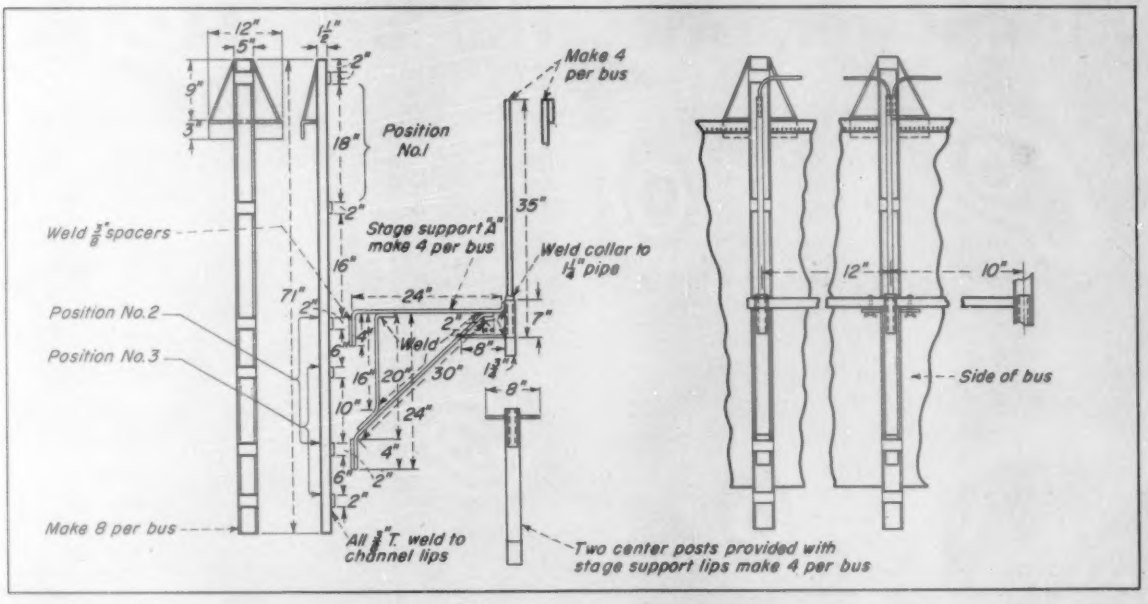


4. Lightweight, three-position stage is easy to assemble

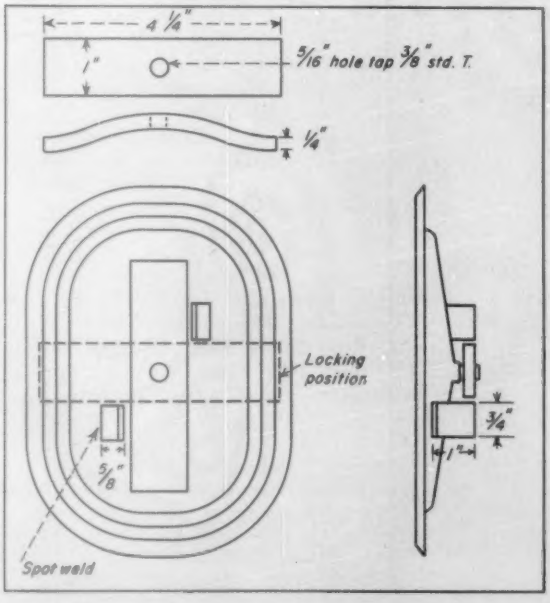
Following a suggestion from our safety supervisor for safe staging equipment, the men of the body shop combined all their ideas toward designing a set of staging necessary for working on the construction of bus bodies.

The first requisite was that the staging must be light, easy to assemble, and when not in use, could be stored in a small space. With assistance from the machine shop, all of the above requirements were met.

The accompanying sketch shows the details and you will note that the staging supports are designed to attach to the body posts in three positions of elevation:

1. For the assembly of the roof structure
2. For working on the upper window area
3. For working on the lower window area

You will also note that there are four stage supports used for each side of the coach. All four are identical with this exception: The two inside supports are provided with an overhanging plate shown in the drawing as "Stage Support Lips," to which the walkway is secured.



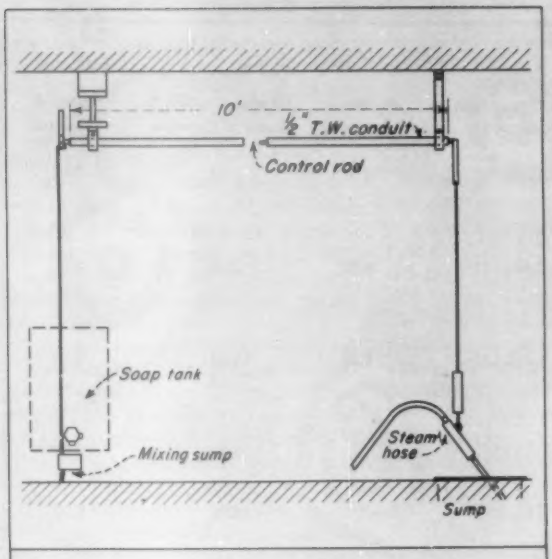
5. Spot weld holds locking bar rigidly on remodeled 6-71 hand hole covers

Hand hole covers are secured by ⅜ in. capscrews to the inner cylinder walls from each side of the block on a 6-71 diesel engine. A distortion of the cylinders was discovered by other bus operations due to the traction set up by tightening the hand hole covers from each side of the cylinder. This they remedied by putting a spring-loaded bar between the cylinder wall and the frame of the hand hole cover to secure the cover in place. As this type of bar required a special made spring that had to be made at a specialty house, it not only increased the cost per unit for fabricating these tie bars, but also did not hold the bar in place in a rigid manner.

We made a change at San Diego Transit System which we believe is an improvement to this hand hole cover, by spot welding risers inside the cover to act as stops to hold the bar in place for locking.

The accompanying diagram shows in detail the requirements for assembling the locking device which we developed in our shop.

In conjunction with this change, we are brazing ¼ in. bushings to one hand hole cover for each engine.



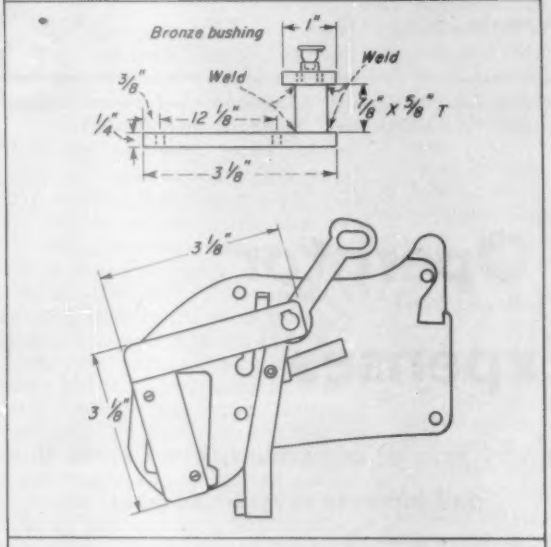
6. Bell crank control cuts losses of steam cleaner liquid soap

Due to the necessity of having a steam cleaner available for intermittent cleaning of bus engines, chassis and small parts, it is practical to keep the steam cleaning unit "fired up" so it is ready to go at all times during the eight hour working period.

Since this type of boiler operation requires a certain amount of water passed through the coils when hose is not being used, it causes a loss of soap as the tap on the soap tank is set at a predetermined discharge.

To eliminate the waste of soap, a bell crank control was installed at our steam cleaning room, shown on the accompanying print. After the steam hose is used each time, it is fastened by a hook to the suspended cable connected to the bell crank control which in turn shuts off the source of supply of liquid soap.

The use of soap was reduced by one-half.

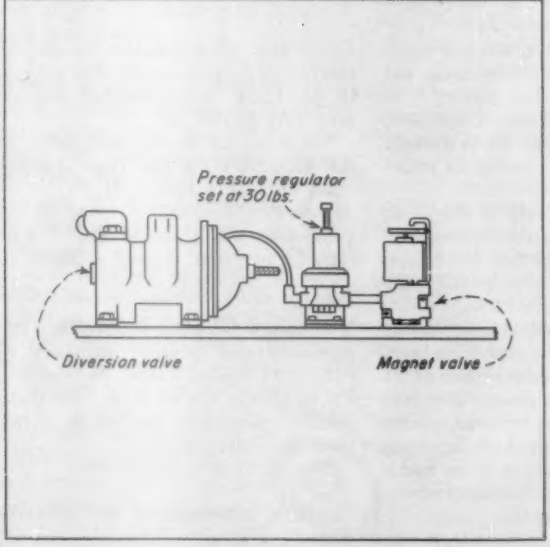


7. Support reduces bearing wear, improves throttle arm stability

Through the courtesy of the superintendent of equipment of the Houston Transit System, the idea was put into use on our diesels of installing a bracket support on the throttle arm control.

The cover and lever assembly GMC #5174419, mounted on top of the governor housing, contains only one bearing; the control arm attached above this bearing is constantly being pushed or pulled by the controls from the accelerator pedal. After a short time this cover bearing wears and erratic throttle application develops. By the installation of this support bracket, the defective cover need not be removed as the added bearing support corrects this difficulty.

The accompanying print shows the method of fabrication, which we feel is an improvement over the Houston bracket.



8. Pressure regulator saves diaphragms and components of diversion valve

The maintenance costs on replacements of diversion valve diaphragms, GMC #2214685, due to road failures was one of our major problems. New coaches sometimes had diaphragms go out within 300 miles of service.

To overcome this trouble, a pressure regulator was installed between the magnet valve and the diversion valve, thus reducing the pressure on the diaphragm from 100 to 30 lbs. at which the regulator is set. The reduced pressure not only saved the diaphragms from abuse but also prolonged the life of valve seat and valve within the diversion valve.

Diversion valves with regulators have been in service for over one year and are still in good condition.

Transit Companies by Annual Gross Revenue	Number of Companies	Gross Revenue	Net Operating Revenue	% Gross Revenue	Per Cent of Gross Revenue: Administration & General Expense	Per Cent of Gross Revenue: Taxes & Licenses
Over $5,000,000	8	$145,950,915	$4,245,767	2.92	7.92	8.02
Less than $5,000,000 but more than $2,000,000	16	51,080,130	2,462,133	4.82	7.65	8.00
Less than $2,000,000 but more than $1,000,000	21	30,002,712	1,499,092	5.00	8.65	9.15
Less than $1,000,000 but more than $500,000	25	18,650,518	(3,136)	.....	8.70	8.67
Less than $500,000	36	12,133,067	(203,682)	.....	10.30	8.70
	106	$257,817,342	$8,000,174	3.13	8.37	8.25

THE SQUEEZE OF THE SMALLER TRANSIT COMPANIES is evidenced by the chart above, which also shows that smaller companies might save in "Administration and General Expenses" and "Taxes and Licenses." Parentheses indicate deficits.

The Small Transit Operator: He Can Still Cut Expenses

A noted transit operator gives his views on why smaller companies, even more than larger ones, must seek ways to cut expenses . . . and increase revenue sources.

CLINTON D. SMITH, vice-president and general manager of Schuylkill Valley Lines, Norristown, Pa.

WHAT CAN THE SMALL TRANSIT COMPANY do about its diminishing net income or its increasing deficit?

What can the small transit operator, as a responsible citizen, do to prevent his community from losing its transportation system?

We speak particularly of the small company because, as the accompanying tabulation shows, they have been unable to ward off successfully the ravages of passenger decline.

Analysis of this tabulation reveals that 57 per cent of the reporting companies each had gross revenues of $1 million or less. As a group, they had a deficit net operating revenue, whereas the group of companies in which each exceeded $1 million gross had a black figure for net operating revenue, before other deductions.

Breaking it down into units, it was found that all companies in the $1 million or more category did not run in the black—approximately 16 per cent were in the red.

Likewise, all of the companies in the $1 million or less class did not wind up with a deficit. However, 47 per cent of them did . . . and of the companies with gross of $500,000 or less, 55 per cent showed a deficit in 1955.

We asked Clinton D. Smith, vice-president and general manager of Schuylkill Valley Lines, Norristown, Pa. to give us his ideas on what these smaller companies can do to better their financial picture.

Here is what he had to say . . .

"Before attempting to indicate what these smaller companies can do,

over and above any previous action to reduce expenses or increase revenue, it may be of interest to make another observation in the tabulation. Companies each of whose gross revenue was less than $500,000—about one-third of the total—spent 19 per cent of their gross for the combination of 'Administration and General Expenses' and 'Taxes and Licenses,' compared with 16 per cent for companies in the over-$2-million gross revenue classification.

"In the less-than-$500,000 group 'Administration and General Expenses' varies from 3.7 to 20.5 per cent of gross revenues, and among the companies in the $500,000-$1,000,000 category the variation is from 5.1 to 13.8 per cent.

"The conclusion: Smaller companies are warranted in concentrating on the potentialities of reducing the total expense in this account, and also in Taxes and Licenses,' as well as other accounts associated with these two.

"Although we may make certain additional cuts in scheduled route service on holidays, Sundays and the late evening, the net financial relief from this source is limited and, therefore, of doubtful value.

"Unless we want to dry up all of our fixed route traffic, we now should exhaust all other fields for reduction of expenses. Although many managements feel that there is no need for public transportation service in these slow hours and days, I say that before any further radical action is taken to eliminate this off-peak service, a definite action should be taken toward reducing the costs of administration and general expenses and also of taxes and licenses.

"These previous comments indicate that transit companies, small as well as large, must intensify their research just as other industries, in recent years, have conducted extraordinary research into the methods of obtaining better and additional useful products.

"Transit research involves most challenging situations, such as the approximate 100 per cent increase in auto registrations within a period of about 10 years, and a similar 100 per cent increase within the past year in the number of families owning more than one automobile.

"We must not let desperation cause an impulsive cut in off-peak schedules. Apparently we lose not only the passengers actually involved in the period, but the discontinuing of service for this period accelerates the general opinion that the local transit company is on the toboggan—'Let's buy the second car now,' or 'Let's get together and form a car pool.'

"Most of our transit trade associations recognize that their chief function is legislative in character—that they should not only be in a position to stop legislation which would add further to the costs of operation, but they must be strong enough to initiate and secure legislation favorable to bus operators, such as that secured in Wisconsin.

"To do this, any trade association needs to get more of the small operators in its membership . . . and then convince them to maintain constant contact with their legislators.

"These latter, incidentally, frequently complain that transportation representatives don't keep them informed on the transit situation in such a degree as to be helpful. Transportation management rushes in, they say, only when legislation threatens disaster.

"Even if such negative legislation is killed, the transit industry has merely maintained status quo—it has not done anything positive to secure much-needed relief legislation.

"To return now to methods of cutting expenses, the need for which was mentioned before, here are some of the procedures already in use on some smaller properties:

1. "Elimination of two offices by concentrating all company transactions at the operating headquarters. Such a procedure not only attains operating economies, but also increases the opportunity of management to make more intensive studies of other potential economies.

2. "Elimination of clerical procedures which in the past may have been interesting and of some value, but now, in the light of shrinking revenues, can be omitted, with resulting clerical economies.

"When really pertinent information is needed, management personnel can quickly dig it out and probably initiate any warranted action with the greatest dispatch. This system places research in competent hands at a minimum of expense.

3. "Transportation supervisory routine, in many instances, may be revised. Some companies have worked it so that inspectors are not checking the same routes every day, but their sample observations on any one route are spread over a greater period of time. This results either in reduced personnel, or makes possible absorption of work previously performed by personnel no longer on the payroll.

"Finally, how about increasing revenue, as well as cutting expenditures of revenues already obtained.

"Far be it from any transit official to say, 'They have all been tried.' Many have been, and some, at least, have served to neutralize the net competitive effect of the automobile. But we are advocating transportation research of higher intensity—so all of the old should be reviewed along with the consideration of new promotional items.

"Let's look at some of them . . .

"Charters, tours and excursions have been the salvation of some properties, and are receiving a concentration of study on many others. There is no longer any need to outline their possibilities. It is merely a matter of giving them the desired attention.

"School fares are another possibility. A ten cent or higher school fare now exists on many transit properties, and it has been found that in some cases the load factor for carrying students creates more revenue per hour than a large proportion of adult fares.

"Therefore, the school volume potential for increasing revenue is being thoroughly studied. This involves not only transportation of students on fixed routes, but also by charter.

This latter is a field in which the surface has only been scratched. For the idea of the bus as a classroom on wheels is growing.

"If the smaller transit operator will concentrate on these things—trimming expenses in 'Administration and General Expenses' and in 'Taxes and Licenses' . . . keeping in constant contact with his legislators . . . embarking on a thorough research program . . . and looking for new ways to increase revenue—there is bound to be some betterment in the financial picture of small transit companies throughout the nation."

The small intercity bus operator has his problems, too. For the story of how one company weathers the financial storm turn the page and read about Warwick Stage Lines of New York.

WARWICK DRIVER AL BAUM works on a bus while Superintendent of Maintenance Marty Kurtz stands by. Baum has already made a morning run to and from New York . . . ends out the day as a mechanic. In the summer Kurtz also drives a bus.

How to Operate a 14-Bus Fleet

ONE OF THE MOST UNUSUAL bus operations in the country is Warwick-New York Stage Lines, a 14-bus company which makes a run of 60 miles between the resort area of Greenwood Lake and the Capitol Greyhound Terminal in New York City.

Why unusual? Because probably in no other bus company in the country has economy of personnel been so perfected. For, excluding the heavy summer business, Warwick Stages has a total payroll of exactly 11 men. That's right—eleven.

How do they do it? Well, needless to say there are no fancy vice-presidents, high-titled executives, or supervisors who don't know what to do with their time. Just about every one of the 11 men do a little bit of everything. There's no wasted time . . . no wasted money—and the line shows a profit at the end of each year.

Notice that we said 11 men. That's right. For this is one bus company in which men still rule supreme, for the simple reason that not one bit of feminine pulchritude adorns the office . . . or the payroll.

President Michael Evanyke, who took over as head of the line when his brother Andrew died five years ago, is one of those old-line bus operators who believes that everybody in a bus company, including himself, should know how to drive a bus.

Indeed, in the heavy summer months it's not unusual at all for a Warwick passenger to climb aboard and

TOP COMMAND consists of President Mike Evanyke, center, flanked by maintenance boss Marty Kurtz on the right and traffic boss George Kelly on the left. For Kelly's other duties, see below.

TRAFFIC MANAGER KELLY, behind the wheel of a bus, pulls into the garage area after completing a trip to New York.

with 11 Men

be greeted from behind the wheel by the president of the line, for Mike Evanyke will still take out a run whenever there's a sick driver or some other emergency arises.

"That's the way it has to be in a small company like ours," he says. "And besides, it gives me a chance to meet our passengers . . . hear what they talk about . . . get to know what they like and dislike about our service."

You're probably wondering by this time about the rest of the personnel setup, and how a company can operate about a million miles a year, handle charter work, bookkeeping, traffic and maintenance, all with a base of 11 regular employees.

One of the key men who makes this possible is George Kelly, Warwick's traffic manager and probably the most popular driver among the regulars of the line.

Every morning Kelly pulls an early run out of Warwick, N.Y. and arrives in the Greyhound Terminal with a load of early bird commuters. While he's in the terminal he takes care of any Warwick Stage business which needs his attention as traffic manager. Then back behind the wheel for the trip back to Warwick and company headquarters, where once again he serves as traffic manager and dispatcher, checking loads at various points along the route, and calling for extra sections when they're needed. Of course, it goes without saying that Kelly will also take an afternoon run back into New York if necessary.

In addition to all these duties, he acts as general assistant to Evanyke and all-around troubleshooter.

The maintenance department is set up along the same versatile lines. It's headed by Marty Kurtz, whose official title is maintenance superintendent, but—you guessed it—he also drives a bus during the busy summer months.

In addition, there is a full time mechanic and a sweeper and washer who, along with Kurtz, takes care of the fleet of 14 ACF IC41's.

They do all their own overhaul and repair, even including painting. But they have help. For between runs and in the off season the six regular drivers pitch in and help out with the maintenance.

All this works out very well from the standpoint of operations as well as in the payroll figures. In fact, Warwick has been gaining short haul passengers at the rate of almost eight per cent a year, Evanyke says, and charters are up almost 10 per cent this year over last year.

Since much of this charter busines, incidentally, is in the winter time, the fact that Warwick can keep its full staff of 11 men on a full time basis makes its regular drivers available for this work, even though the line runs only five round trips in and out of New York on winter week days.

Evanyke attributes much of their charter business to personal contacts made by himself, Kelly and others of the staff, as well as the fact that the company owns and operates only comfortable intercity buses.

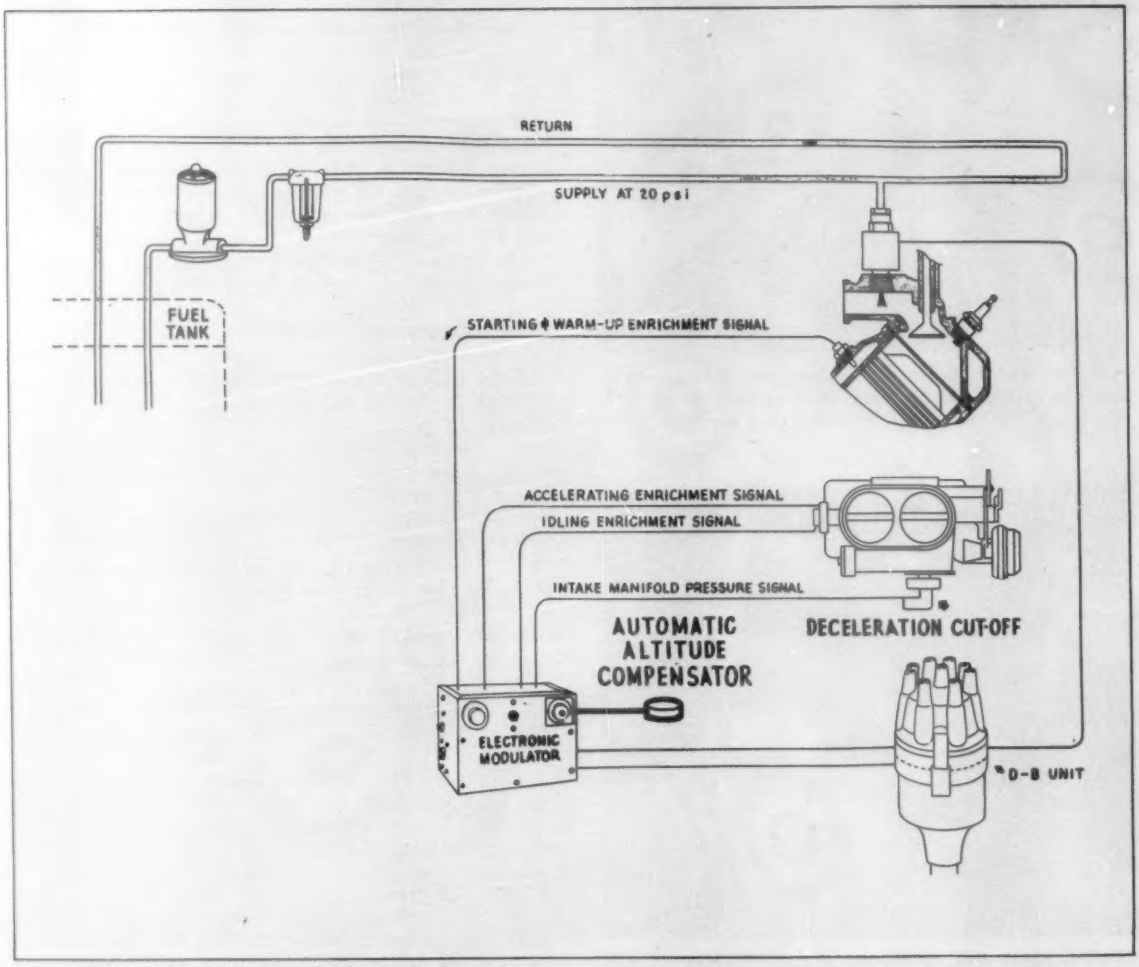
Incidentally, an unusual feature about Warwick's longer charter trips is that two drivers are always sent—both as a safety precaution and also as an aid to the driver in handling baggage, directing passengers, etc.

For the future, Evanyke and Kelly see the possibility of continued expansion for Warwick Stages. The Warwick area which they serve is growing as a resort center, and closer to New York City thousands of new homes are springing up, housing commuters who will ride to work in Warwick buses.

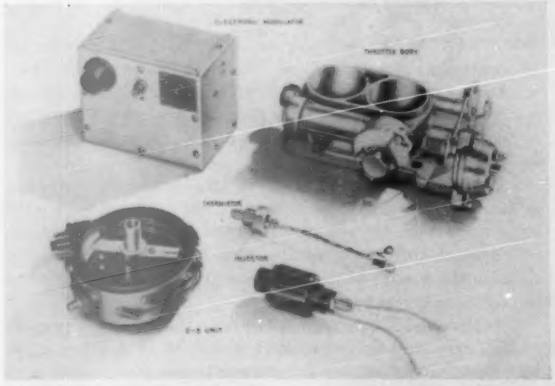
Evanyke feels strongly that bus lines such as his, which provide year-round service for the people in the area he serves, should be protected against summer opposition by other operators who come in, as he says, to skim the cream of the business and then pull out when the passengers get sparse.

"But even so," he says, "we believe that with the growth of this area and the increasing difficulty of driving a car into New York City, we'll continue to get more customers —as long as we give them a comfortable bus to ride in and a fast trip in and out of the city."

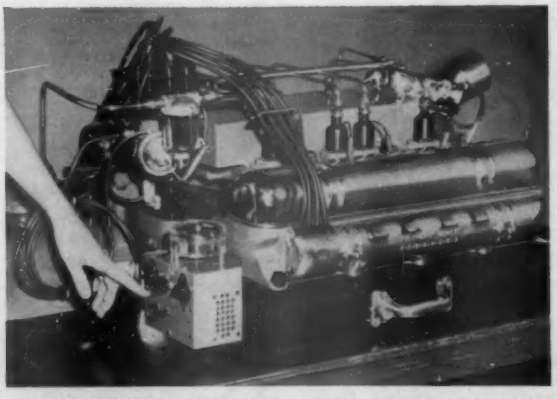
Gasoline Injection: A Look



SCHEMATIC DIAGRAM of the Bendix injector shows working of the most radical of the three injector systems.



SIMPLICITY OF SYSTEM is shown by these components which replace conventional automotive carburetor.



TIMED ELECTRIC SIGNALS are interpreted by brain box. Signals are sent to injectors for metering fuel.

at Three Different Systems

There's been a lot of talk in automotive circles recently about fuel injection systems and their benefits. What do they mean to the bus man? Not very much at present . . . but they could pay off in the future in more power and greater economy.

GASOLINE INJECTION IS HERE, and with it the promise of more efficient and more powerful engines . . . at least as far as autos are concerned. But bus operators might well take their cue from these experiments.

So far this year three separate fuel injection systems have been announced, one of them to become optional equipment on a 1957 automobile.

From the use of these systems engineers might glean enough data to make similar systems for heavy-duty engines such as those used in buses, or they may come with an adaptation for existing engines.

To date, manufacturers have been frank to admit that their systems are being restricted to passenger cars . . . that injection systems for buses are not in the immediate future.

Nevertheless, here are the three systems which may some day add as much as 20 per cent to the power output of your gasoline engines, or return a comparable increase in fuel costs.

Borg-Warner's Marvel Schebler Products Division announced its baby at a meeting of the National Tractor Meeting of the Society of Automotive Engineers.

Already prominent in the field as a leading producer of carburetion equipment and automatic transmissions, the division has been experimenting with fuel injection since early in the 1930's, when it manufactured fuel injectors for aircraft engines. At the same time, it conducted experiments with similar units for autos, trucks and commercial planes (those produced were for government airplanes.)

Marvel-Schebler engineers point out that conventional engines modified for fuel injection can produce from 15 to 20 per cent more power. That's because, say the engineers, the system puts an end to the problems of "rich" and "lean" mixtures for air and fuel.

As well known, the injector's characteristic of mixing the two at the combustion chamber opening delivers the correct mixture to each cylinder.

Engineers further say that new engine designs making full use of fuel injection's advantages could do even better than the 20 per cent power gain and the economy of converted engines.

While fuel injection has these basic advantages it has a less tangible one in the field of public relations. Undesirable exhaust fumes, almost always present during deceleration, would be reduced markedly.

Injectors immediately cut off the flow of fuel when the driver's foot is removed from the accelerator. With a carburetor there is a time lag during which gasoline is still supplied to the engine although it's not needed.

This waste gasoline is either unburned or, at most, only partly burned, resulting in noxious, unpleasant exhaust fumes.

Of little concern to the bus operator—if and when fuel injection becomes a reality in the industry—is the lower hood line so important to automobile styling.

Little detailed information has been released by Borg-Warner on the technical facts of its fuel injection system. The sketches on page 33 show in considerable detail, however, the elements that make up its system—pumps, filters, fuel injector, nozzles, etc.

Bowing in actual use is the system announced recently by the Rochester Products Division of General Motors. It will be available as standard equipment of Chevy's Corvette, and as optional equipment on other Chevrolet models.

As the sketches on page 32 show the system has two basic components . . . air meter and fuel meter.

The former admits air to the intake manifold. And in doing so also actuates, through a system of vacuum diaphragms and linkage, the fuel meter.

Under various conditions of engine operation, therefore, the engine is always assured of the proper air-to-gasoline mixture.

At present a conventional fuel pump supplies the circulating system. Fuel level is maintained by a float similar to those in carburetors. A gear pump driven by a cable from the distributor shaft takes in fuel at the bottom of the bowl and delivers it to the fuel control valve.

The amount of fuel delivered by the nozzles is determined by the pressure and the pressure control plays the role of a regulator. Ports just above the fuel valve provide pressure relief and circulate the fuel.

The spill plunger is actuated by the fuel pressure from below, and the fuel control linkage is actuated from above by vacuum diaphragms.

The diaphragms are operated by the vacuum created at the air intake venturi. The vacuum varies according to the amount of air entering the air meter.

The vacuum is transmitted through a line to the main control diaphragm of the fuel meter, supplemented by an alternate line which takes off at a more critical location in the air meter. The purpose of the alternate line is to provide good idling when vacuum is so low the mainline takeoff would be insensitive to it. The alternate line includes an idle adjustment screw.

In addition, there is a line that leads to an enrichment diaphragm. This diaphragm determines the position of a movable pivot in the fuel-control linkage. The pivot's position, in turn, affects the leverage (and therefore the force) exerted by the main diaphragm. Action of this diaphragm provides a rich fuel mixture for acceleration or heavy loads.

When the engine starts, a ball check blocks off the enrichment diaphragm. The ball check is operated by a bi-metal strip thermostat, electrically heated.

Also included the system is a coasting shut-off vacuum line. Purpose of this line is to prevent fuel from being injected during deceleration.

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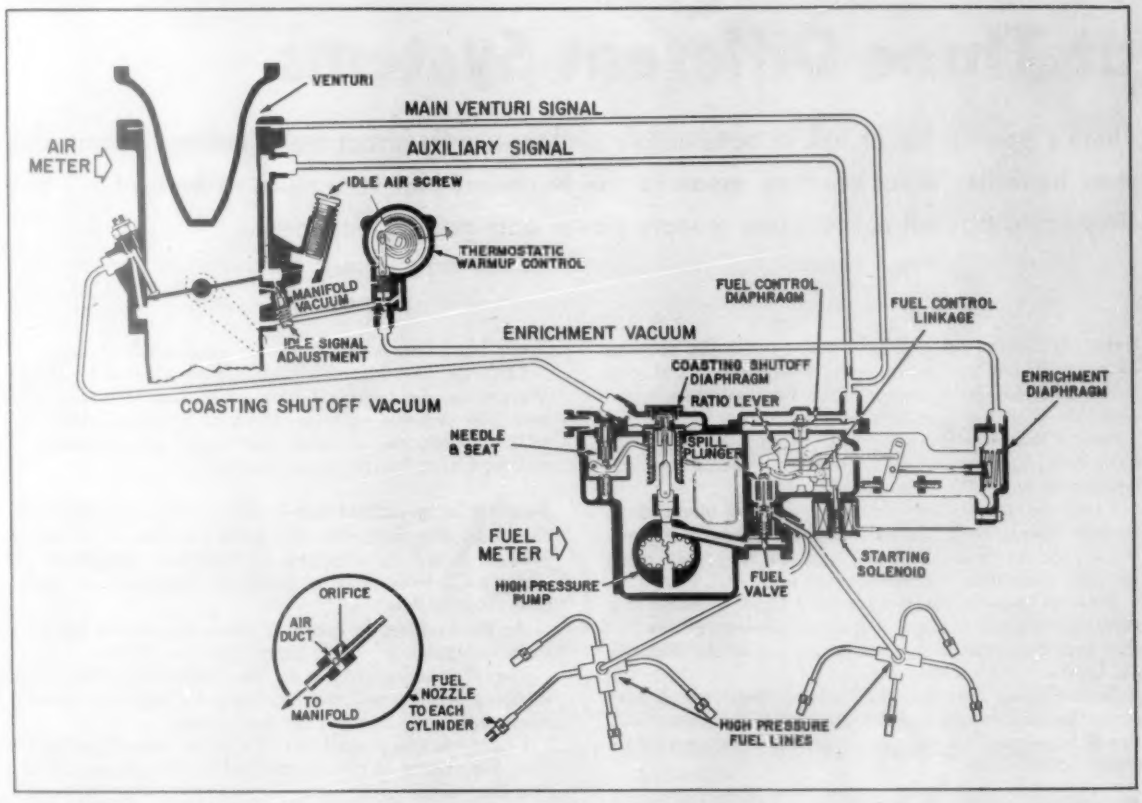


TWO BASIC COMPONENTS go to make up the Rochester unit—the full meter and the air meter.

Perhaps the most radical of the systems so far introduced is the electronic injector which Bendix is now demonstrating, and which is shown on page 30.

Moving parts are reduced to a minimum and no special drive is required from the engine.

While the engine is running, fuel is circulated through the system at 20 psi. But injectors don't measure fuel charge as they do in a diesel. Instead, they open for the right length of time so that the proper amount of fuel is squirted into the combustion chamber.

The system is kept full of fuel by an electric pump with a flow rate of 6 gal. per hour.

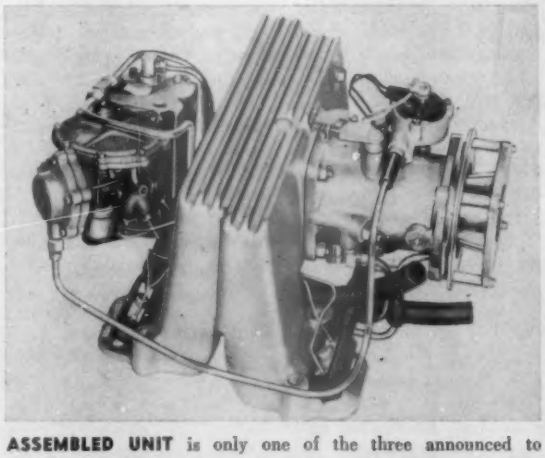
Lines to the cylinders are connected to the circulating system so that gasoline is always present under pressure. Problem is to time opening and closing of the injectors so that just enough fuel is injected into the combustion chamber of the engine.

In actual operation, a "sandwich" is inserted between the distributor cap and its housing. This sandwich consists of a commutator and a revolving brush. It sends impulses to solenoids which open and close the injectors, in the same way a distributor fires spark plugs.

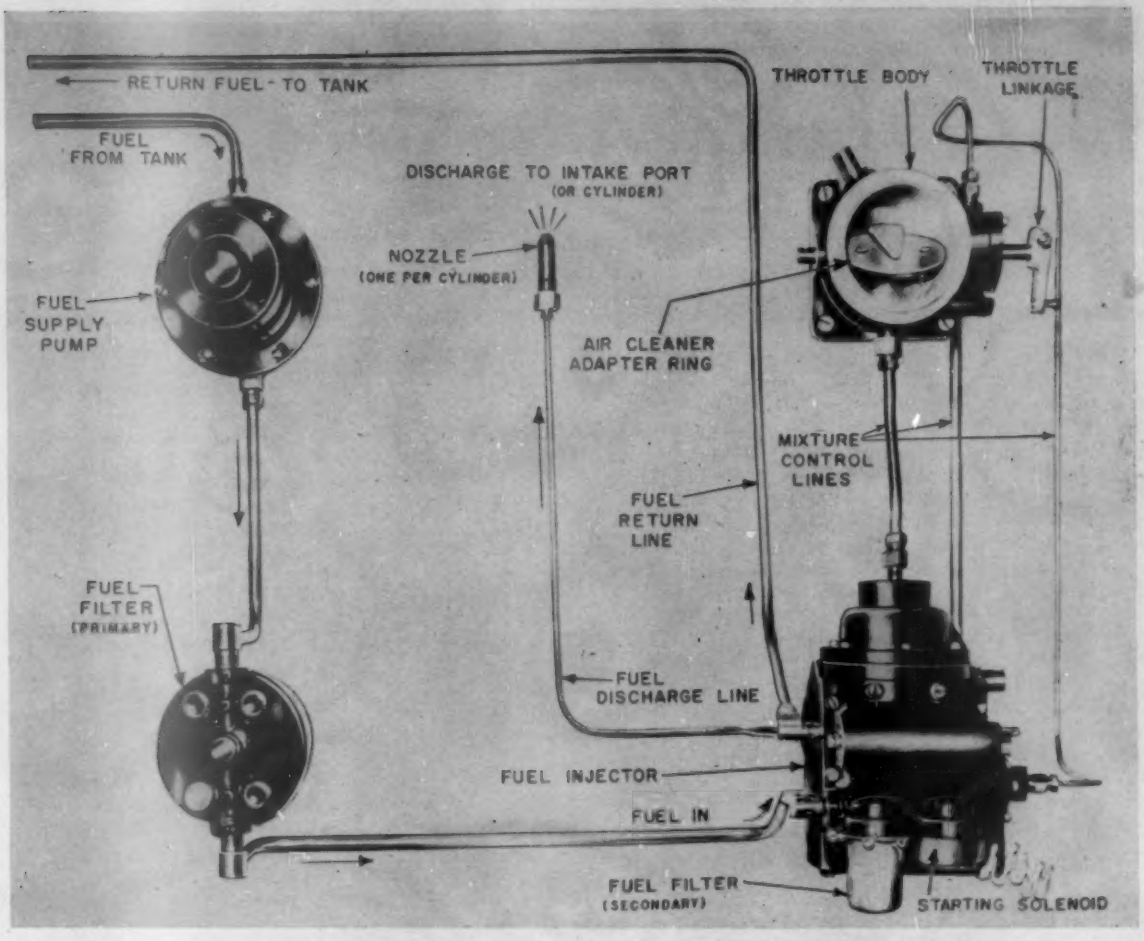
Between the sandwich and the solenoid there is an electronic modulator. It amplifies the signal and passes it on to the solenoid at the injector which does the opening and closing.

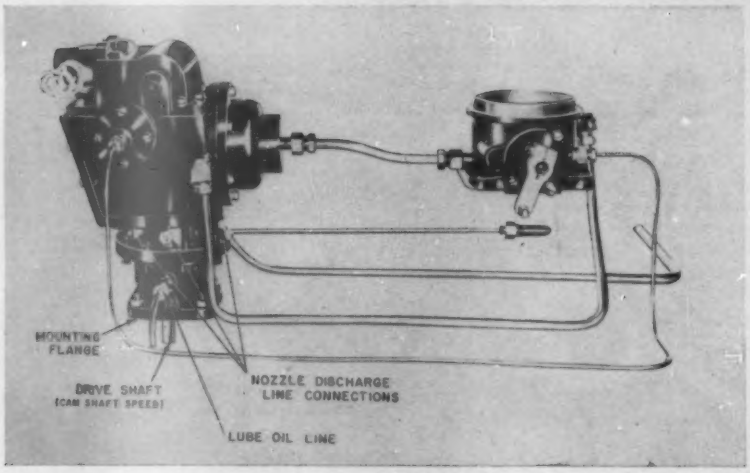
Engine speed is not the only consideration affecting the "brain box," as it's called. Electronic devices keep feeding back signals indicating or controlling several other engine conditions.

These devices are in the intake manifold to measure intake pressure and on the throttle shaft to measure acceleration demands for a richer fuel mixture. Another is on the throttle shaft to set the idle range; a fourth is in the exhaust manifold to provide a richer mixture for



ASSEMBLED UNIT is only one of the three announced to actually be offered as optional equipment on 1957 automobile.





BORG-WARNER injection system offers 20 per cent power gain and more economy in modified conventional engine, the firm's engineers say. With specially designed engine, gain could be even greater. Better performance and savings will resutl from more complete combustion.

both starting and warm-up demands and a fifth is in the throttle body to shut off fuel on deceleration or downhill operation.

All these conditions vary the impulse that is sent from the brain box to the injector solenoids. And the impulse governs the time the injector is open.

Maintenance of the system should not be too difficult, according to Bendix engineers. Injectors can be replaced in much the same way as spark plugs on present systems; sensing devices, as easily as contact points. For trouble-shooting the system. The mechanic will undoubtedly use instruments.

Sales and Service

Four Points on Advertising

Advertising in weekly and daily newspapers is still the backbone of the ad programs of most intercity companies. Here are four suggestions on how your company might make its advertising more effective.

NEWSPAPER ADVERTISING, for the intercity industry, is one of the most important investments it makes. But since importance, in itself, does not necessarily imply efficiency, let's take a look at some of the advertising ideas which this department has gathered in the course of looking at and studying intercity bus advertising as it comes across our desks.

It seems to us that one of the most common errors made is a lack of consistency. In a business such as this it's important to keep the name of your company, and the services it offers, before the public at all times. In general, then, a constant succession of smaller newspaper ads would be preferable to a few large ads inserted sporadically.

The reasoning behind this is simply that on any given day only so many people are thinking about making a trip between cities served by your company. A huge display ad might very well bring them to your buses. But a series of small advertisements is like the constant dropping of water. Eventually it makes an impression, so that newspapers readers are at all times aware of the fact that your company exists, and of the service it offers. They may not think of it very often, but when the time comes that they want to make a trip your service, because of your advertising, will pop up in their minds as one of the possible ways of getting to their desired destination.

Whether or not they finally decide to use it is, of course, up to the service itself, and to other intangibles such as the way they are treated when they inquire about it. But the point is that your advertising, if it has made them consider you at all, has done all that should be expected of it. It has, in effect, brought them into your store to take a look.

Big ads are perfectly justified, of course, whenever you have something special to tell to potential customers—a new service, new equipment, a change in schedules, etc.

And even without these important announcements, they can be used effectively once in a while as "booster shots" for the small but constant ads which make up the bulk of your advertising program.

The important thing is not to consider that each and every ad you buy and pay for must pull in riders or the money is thrown down the drain. It's the cumulative effect that counts—the constant hammering into the reader's mind the fact that you are there, ready, willing and able to provide service for him.

Another point in advertising which merits consideration is the necessity of studying the market carefully. And we really mean studying—researching—not just haphazardly estimating where people travel . . . and how . . . and why.

Armed with a knowledge of people's traveling habits, bus company officials can effectively gear their advertising to take advantage of those habits.

Random advertising, without knowing the habits of the potential customers in your area, is like shooting into the woods on a black night and hoping to hit a rabbit. You might bag a bunny, but no gambler would give you very much for your chances.

How much better to know what you're shooting at, whether it's rabbits or riders!

Finally, there's one more point which is very important in any discussion of advertising as it applies to the intercity bus industry. The word "advertising" itself means a "turning to"—we advertise to get people to "turn to" the product or service we offer.

But let's coin a word—"contravertising." That would be a "turning away"—anything which tends to make people turn from our product or our service.

We'd probably all have to admit that in the bus industry there are many examples of contravertising. And the sad part is this—you can spend thousands of dollars on advertising to get people to turn to your company's buses . . . but just one piece of contravertising can completely nullify all your good work, and turn customers away every bit as fast as your advertising brings them in.

What are some of those forms of contravertising? We all know them only too well.

A surly clerk . . . a dirty bus . . . a piece of lost baggage . . . a careless driver . . . a sloppy rest station—all of these and many more are deadly forms of contravertising. And they must be corrected or your entire advertising program will be doomed to work against almost insurmountable odds.

Since advertising represents an expenditure of money, that's an intolerable situation.

To sum it all up, intercity bus advertising, particularly for the smaller companies, could use some serious thought on the following points . . .

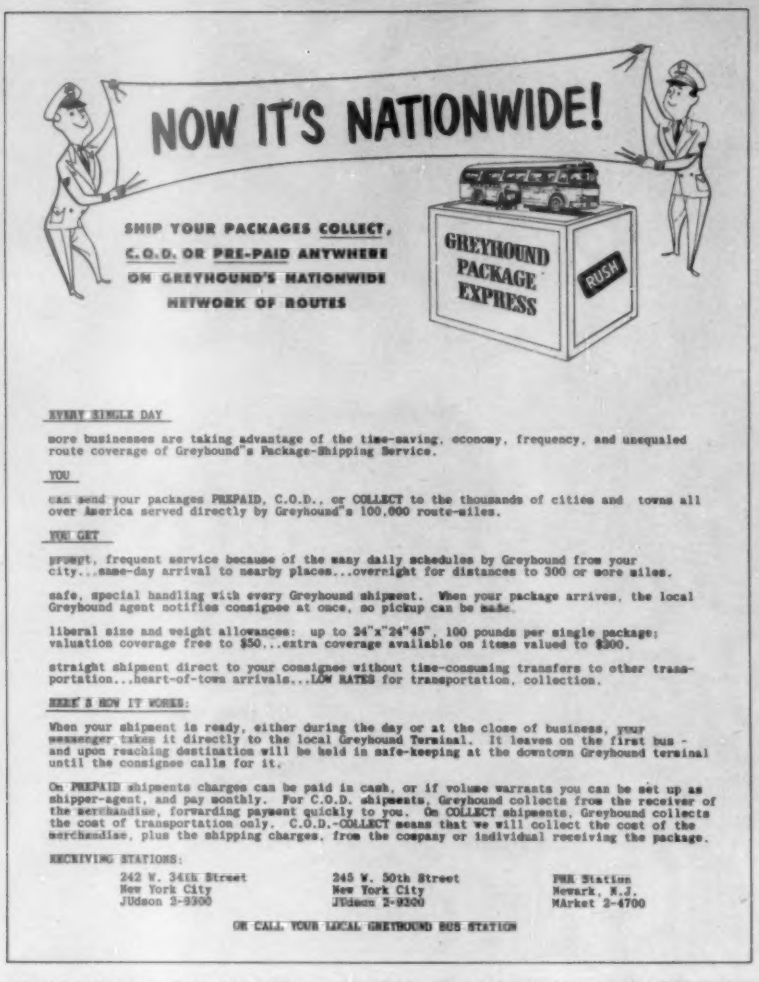
1. The value of constant repetition of smaller ads, rather than occasional insertion of larger ones.

2. The necessity of researching the market to find out what makes people in each area travel, where they travel and when, and everything else about them that can be found out pertaining to their travel habits.

3. The pinpointing of advertising campaigns to take advantage of the knowledge gained through research.

4. Overcoming all those defects in service which we have called "contravertising"—all the bad features which turn people away once advertising, or any other means, has drawn them to giving bus riding a trial.

If individual companies would work on those points, it almost has to follow that their advertising dollars would not be spent in vain, but would, over the long haul, bring in more dollars in revenue.


NOW IT'S NATIONWIDE!
SHIP YOUR PACKAGES COLLECT, C.O.D. OR PRE-PAID ANYWHERE ON GREYHOUND'S NATIONWIDE NETWORK OF ROUTES
GREYHOUND PACKAGE EXPRESS
RUSH
EVERY SINGLE DAY
more businesses are taking advantage of the time-saving, economy, frequency, and unequaled route coverage of Greyhound's Package-Shipping Service.
YOU
can send your packages PREPAID, C.O.D., or COLLECT to the thousands of cities and towns all over America served directly by Greyhound's 100,000 route-miles.
YOU GET
prompt, frequent service because of the many daily schedules by Greyhound from your city...same-day arrival to nearby places...overnight for distances to 300 or more miles.
safe, special handling with every Greyhound shipment. When your package arrives, the local Greyhound agent notifies consignee at once, so pickup can be made.
liberal size and weight allowances: up to 24"x"24"45", 100 pounds per single package; valuation coverage free to $50...extra coverage available on items valued to $300.
straight shipment direct to your consignee without time-consuming transfers to other transportation...heart-of-town arrivals...LOW RATES for transportation, collection.
HERE'S HOW IT WORKS:
When your shipment is ready, either during the day or at the close of business, your messenger takes it directly to the local Greyhound Terminal. It leaves on the first bus - and upon reaching destination will be held in safe-keeping at the downtown Greyhound terminal until the consignee calls for it.
On PREPAID shipments charges can be paid in cash, or if volume warrants you can be set up as shipper-agent, and pay monthly. For C.O.D. shipments, Greyhound collects from the receiver of the merchandise, forwarding payment quickly to you. On COLLECT shipments, Greyhound collects the cost of transportation only. C.O.D.-COLLECT means that we will collect the cost of the merchandise, plus the shipping charges, from the company or individual receiving the package.
RECEIVING STATIONS:
242 W. 34th Street
New York City
JUdson 2-9300
245 W. 50th Street
New York City
JUdson 2-9200
PRR Station
Newark, N.J.
Market 2-4700
OR CALL YOUR LOCAL GREYHOUND BUS STATION

EXPRESS RATES AT A GLANCE are possible for any shipper who uses this folder, developed by Greyhound in connection with its coast-to-coast express program.

Handy Express Chart

PACKAGE EXPRESS, which has been coming into its own in the bus industry for the past several years, has really grown up with Greyhound's announcement of coast-to-coast collect and COD service.

It will now be possible for a shipper to send merchandise anywhere in the country served by Greyhound either collect—where the receiver pays the transportation charges on delivery, or COD—where he pays both the purchase price of the article and the transportation charges.

In connection with its expanded express coverage, Greyhound has prepared a four-page folder, the cover of which is shown above.

The second and third pages list all states, and cities in those states. Beside each listing there is a "scale number" and the average running time from New York.

The fourth page gives the rates for each scale number on shipments from two to 100 pounds. A shipper can find out in a matter of seconds, then, exactly how much it will cost him to ship a parcel of any weight to any point in the country.

Another Rider Gives Her Views

IN OUR NOVEMBER ISSUE we ran the story of a rider's reactions to a cross-country trip by bus. Not all of them were favorable.

Now comes a note from Eastern Greyhound's Bob Kiser, who passed along a letter received by his company from another woman traveler who, with her husband two children, aged five and seven, made a round trip by bus between New York and Seattle.

Here are excerpts from the letter, showing some of the reasons why she enjoyed the trip so much that she sat down to write Greyhound and tell them about it.

"The distance was more than 3,000 miles each way, but the cost of the round trip ticket was very reasonable. This by itself should be an incentive for anyone to venture out to the West. The trip by bus takes only a little longer than a train ride, and is much more enjoyable . . .

"Bus stops throughout the country were quite nice, often new, modern and functional. That was especially true of the larger cities . . .

"Transportation of baggage was efficient. Trunks were at destination when we arrived, and were in good condition . . .

"Of course every passenger wants to have the best seat on the bus. I found that there are many 'best' seats. I would suggest that passengers be allowed to keep their seats for the duration of the trip. No matter how frequent the change of buses on a major schedule route, like cross country, the passenger should be able to keep his seat on all buses. I realize that this cannot be done when a passenger branches off and has to make connections with buses coming from other places. We used one major trancontinental route, and each time we had to change buses we had to rush (something a bit difficult with small children) in order to get a seat together . . .

"The bags for magazines and other small items, as well as the ashtrays, are wonderful additions to the interior of the bus. And so, of course, is the lavatory.

"The public address system is highly recommended. It adds to the nice group feeling which exists."

POLE-TYPE CONSTRUCTION cuts building costs way down. Dirt floor with shale covering easily stands abuse. Parts room can be seen at corner, with main office just beyond that. Forty-five poles were sunk from five to six and half feet below the ground.

Low-Cost Garaging for the Small

EXTERIOR VIEW shows a neat, attractive building that would grace any highway. Aluminum siding needs no paint, little upkeep.

ONE OF THE MOST COSTLY ITEMS in the budget of the small school bus operator is garaging. He has three choices—rent, build or store outside.

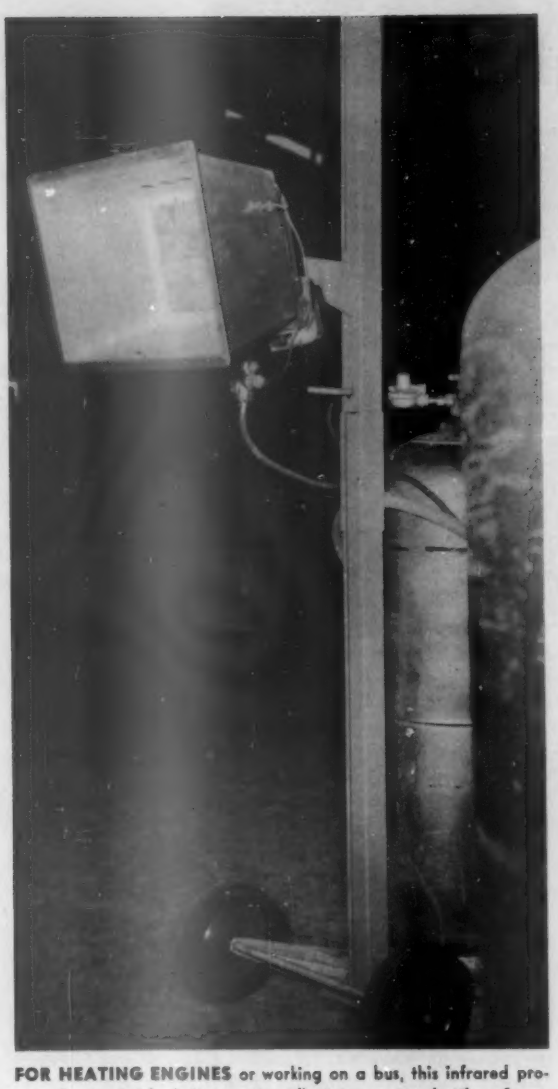
Each has its drawbacks. . .

Renting can be expensive.

A bus opeartor who owns his own garage is better off. But initial cost is usually too high.

Outdoor storage is probably easiest. But outdoor storage, particularly in colder climates, can eventually prove to be the most expensive of the three.

The storage problem may well have found an answer in Chester, N. J., where William and Robert Conover, owners of Conover Brothers Bus Lines, have built a garage costing less than $1.50 per square foot.



FOR HEATING ENGINES or working on a bus, this infrared propane heater is ideal. It operates all winter on two bottles of gas.

School Operator

It is a functional, attractive building. And it protects a fleet of buses from ice, snow and rain. It also wards off the cold winter blasts which sweep across the farmlands, making outside storage impractical.

The secret of its low cost is in its construction. Simple pole-type construction with poles sunk as much as six and a half feet in the ground provides a sturdy, long-lasting frame, and long-wearing corrugated aluminum furnishes an attractive outside "skin."

The garage measures 78 feet by 52 feet . . . providing interior floor space of more than 4,000 square feet. That's enough room for six buses, a parts room, a front office, and storage space which could house another bus. Forty-five poles were used in construction, plus two-by-twelves and two-by-tens in the stress bearing members.

Cross members and braces which are not under stress are mostly two-by-sixes and two-by-fours. A skirt of two by ten inch tongue-and-groove lumber, specially treated with one of the phenol preservatives (used also on the poles) to prevent decay is nailed to the poles all around the garage except at the door sills. One width is buried, and the skirt extends above the ground surface about two and a half feet.

The garage is covered with corrugated aluminum .024 in. thick, except for six skylights. These are translucent corrugated, hard-wearing plastic.

The poles which go to make up the frame vary in diameter from five inches to nine inches, the latter providing the main support. Intermediate poles, while not load bearing are nevertheless buried to a depth of five feet . . . serve as additional nailing surfaces for the aluminum sheeting.

Poles vary in height from 18 feet at the sides of the garage to 32 feet near the center. The distance between the main poles is 26 feet, room enough to park two buses.

At present the Conover brothers park all four of their buses comfortably within the garage . . . still have enough room for another two and possibly more depending upon their size.

Unused space is often rented to neighboring farmers who store their little-used equipment in the garage.

One corner of the building is finished in redwood and serves as a comfortable office. Adjacent to this is a parts room. Eventually the office will be completely insulated and the area above it will be used for additional storage space.

Heat in the garage is not too much of a problem. A small electric heater is enough for warming the office. And a mobile infrared heater warms perhaps 100 sq. ft. of garage space. In its range, mechanical work can be done in shirt sleeves with the outside temperature well below freezing.

The temperature has yet to drop below 20 deg. in the garage even in the coldest weather. The building helps contain any heat the buses might give off.

Of course antifreeze is used in all Conover buses. One school bus uses alcohol, the rest use permanent anti freeze.

The Conover brothers own one diesel bus, a 1945 GMC 3702, which is a little harder to start in cold weather. But with the rear panel open and the infrared heat applied for 20 minutes, the bus has never failed to start. A can of ether concentrate in the garage is still unopened.

If the Conovers decide to install electric heaters, the building is equipped for 220-volt current. In the garage only one-half the system is used. Only the gas pump is on 220 volts.

What it cost to build • As mentioned the garage cost less than $1.50 per square foot. And if built today, under higher prices, it would still run only $2 per square foot.

Total cost of the garage was $6,000, representing the cost to the builder plus ten per cent. Since it was built (a little over a year ago) wages have climbed from $3.65 an hour to $4.50 for line electricians who are needed for the pole work.

Since last year, aluminum prices have also climbed.

Continued on page 59

Here's How Courts Ruled

QUESTION: Is a "rolling stop" opposite the island dividing a main highway good driving practice?

ANSWER: In this case a school bus first stopped as required before crossing the main highway. The driver looked for approaching traffic and after crossing the southbound lane, came to a "rolling stop" opposite the ends of the islands separating the two lanes of the highway, and then started across the northbound where the bus was hit by a car.

There was considerable conflict of testimony about the bus driver's ability to see the car as it approached because of a truck proceeding in the same direction, but the District Court of Appeals of California 4th District, ruled against the bus driver as follows:

"Even if it be assumed that defendant had the right of way at the time of his original entry into the intersection, the fact that the bus was stopped in the center portion of the street and later continued on in the face of oncoming traffic, without due caution and circumspection, might well justify a finding of negligence of the bus driver." *(McGuire v. San Diego Transit System 299 P. 2d 905.)*

QUESTION: Should extra precautions be taken to protect an alighting passenger on a snowy day?

ANSWER: In a decision in which there were three dissenters, the Supreme Court of Minnesota indicated that extra care should be exercised.

The bus stopped beyond the regular stop and was about 3 to 4 ft. from the curb. The passenger alighted, and turning his face to the bus, shuffled back along it in order to get to a place where the drift did not cover the curb. The bus started and he fell under the wheels.

The Supreme Court in the majority opinion held that the passenger was entitled to a reasonable opportunity to get beyond danger and to a reasonably safe place. It said, "While it is true that an adult passenger on a bus or street car ceases to be a passenger after he alights therefrom, the carrier's duty of exercising for him the degree of care required of it for its passengers continues thereafter until he has had a reasonable opportunity of getting beyond danger from the vehicle's operation or movement, and this duty encompasses the carrier's obligation of exercising reasonable care in selecting a reasonably safe place for the purpose of discharging him, although it is not responsible for the condition of streets, sidewalks or boulevard surfaces." *(Patton v. Minneapolis Street Railway Co., 77 N.W. 2d 433.)*

QUESTION: Does the fact that a pedestrian is not on the crosswalk when hit by bus at intersection make him guilty of contributory negligence?

ANSWER: Not necessarily. The jury must determine the facts in the particular case. That was the ruling of the Indiana Supreme Court in a case which stemmed from an accident in which the bus hit and killed a pedestrian. Both the bus and the pedestrian had stopped at the intersection for a red light. When it turned to green, both started, the pedestrian over the crosswalk and the bus turning the corner. Both then stopped and the pedestrian had started around the front of the bus, when it started up again and hit him. The lower court directed a verdict for the bus company, but on appeal the Supreme Court sent the case back for a new trial, saying that the jury should have been allowed to determine whether or not the bus had yielded the right of way to the pedestrian and whether or not he was on the crosswalk when hit. *(Novak v. Chicago and Calumet District Transit Corporation, 135 N.E. 2d 1.)*

QUESTION: Who is to blame when a bus skids over a curb in icy weather and hits a child waiting for the bus?

ANSWER: Under such circumstances the bus company should not have been absolved of negligence as a lower Illinois court did when it directed judgment for the bus company. The Appellate Court for the 2nd District held that the question of negligence should have gone to the jury. *(Jacobson v. Central Illinois Electric and Transit Co., 135 N.E. 2d 506.)*

QUESTION: Should only the transportation end of a corporation's business be considered on a request for a fare increase?

ANSWER: A North Carolina company supplied electric power and also operated a transportation system. The franchise contained the following clause. "This fran-

in These Bus Company Cases

chise is granted as an individual unit and forfeiture by the company of one or more powers herein contained shall result in forfeiture of the whole."

When an increase in fares was sought, the argument was put forward that the clause required that the company be considered as a unit for all purposes, and that profits made in the power end of this business should offset losses in the bus end of its operations.

The Supreme Court of North Carolina rejected this contention and held that the profits from power sales had no bearing on the need for a fare increase, but the clause was in the franchise with the aim of preventing the company from giving up one part of its business while continuing the other. It added that only the value of the property used for transportation should be considered. *(State v. City of Greensboro, 93 S.E. 2d 151.)*

QUESTION: Where should a bus driver look when approaching an intersecting one-way street?

ANSWER: A collision occurred between a bus and an automobile when the driver of the automobile was going the wrong way on a one-way street and emerged into the intersection from the side where nobody was expected. He sued the bus company claiming that the bus was going too fast, and that the bus driver had time to see him and avert the collision.

After reviewing the evidence, which showed that in getting into the one-way street a block away, the automobile driver had passed a "Do Not Enter" sign, and that the bus driver had been watching the side from which he might expect traffic, the Oregon Supreme Court ruled that the ordinance making the cross street one-way relieved the bus driver of the duty of looking for traffic on the side of the intersection from which traffic was forbidden to emerge. *(Senger v. Vancouver-Portland Bus Co., 298 P. 2d 83 5.)*

QUESTION: When a sudden stop in heavy traffic injures a passenger, is the bus company responsible?

ANSWER: In a Connecticut case involving a bus moving in heavy traffic in New Haven with 29 standees aboard, the Supreme Court of Errors and Appeals held that the bus driver was negligent. There was testimony to the effect that the driver was watching the passengers in his bus rather than the road ahead, and this testimony probably had considerable weight.

The woman who was injured fell against the fare box when the bus stopped suddenly to avoid hitting a car which had stopped just ahead. The Court outlined the bus company's responsibility as follows:

"The defendant as a common carrier of passengers for hire was bound to use the utmost care consistent with the nature of its business to guard the passengers against all dangers which might reasonably and naturally be expected to occur." *(Pillou v. Connecticut Co., 123 A.2d 470.)*

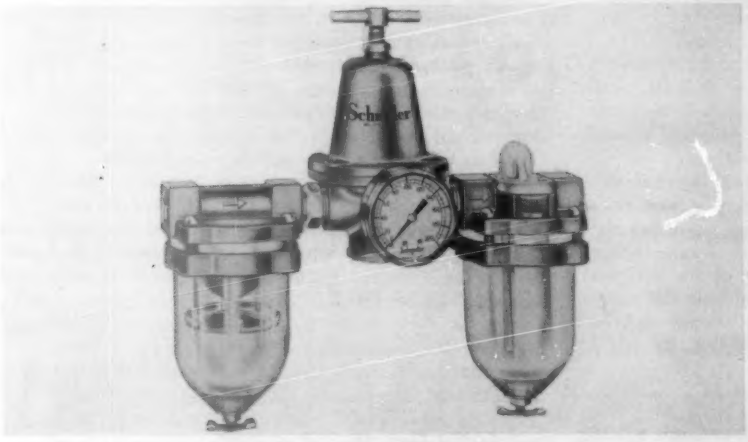
QUESTION: What is a bus driver's duty toward the exceptional passenger?

ANSWER: A woman 67 years of age, weighing 210 pounds and with her arm in a cast, attempted to leave a bus by the front door but was directed to the rear door by the driver. The rear door had to be held open by another passenger. In attempting to alight, the heavy woman's dress was caught by the closing door and she was injured. The Florida Supreme Court's idea of what the driver ought to have done is set forth in the following excerpt from its decision holding him guilty of negligence.

"It was plain to the operator of the bus that she was handicapped by a combination of age, weight and injury. At a time when she needed help she seems to have met hindrance. She tried to leave through the door of the bus that remained open and at a place where she could easily have stepped to the curb. She was sent to the door that had to be held open, and forced to take a step that was hazardous. According to the allegations of her complaint she was not given the attention she deserved as a passenger, and we detect in this nothing justifying the construction that she was guilty of contributory negligence." *(Edwards v. Jacksonville Coach Co., 88 So. 2d 543.)*

The cases described above have been compiled especially for BUS TRANSPORTATION *by William Jabine.*

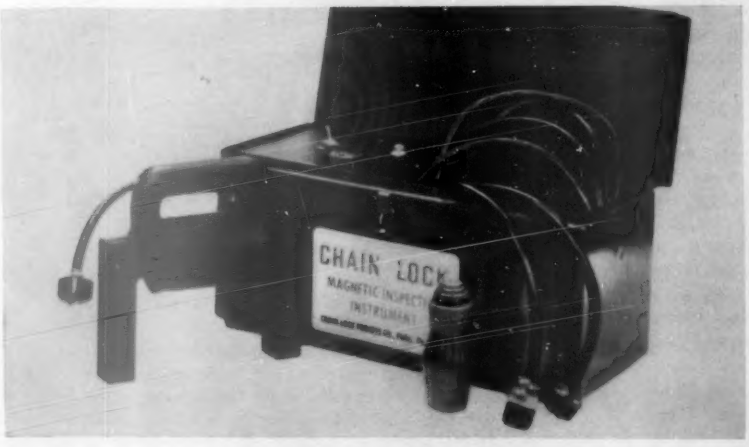
What's New



New Lub-Air-Ator . . .

. . . offers low cost protection of air operated wrenches, drills, tools and equipment and reduces maintenance costs. The Lub-Air-Ator is a combination air filter, regulator and lubricator.

It is fully automatic, and easily serviced without removing from the pipe line. The regulator adjusts air flow from 250 psi inlet pressures down to five to 125 psi by simply turning regulator handle. Pressure gage can be mounted front or rear of regulator. The lubricator unit has a vibration-proof adjustment thumb wheel. *A. Schrader's Son Div., Scovill Mfg. Co., Brooklyn, N.Y.*

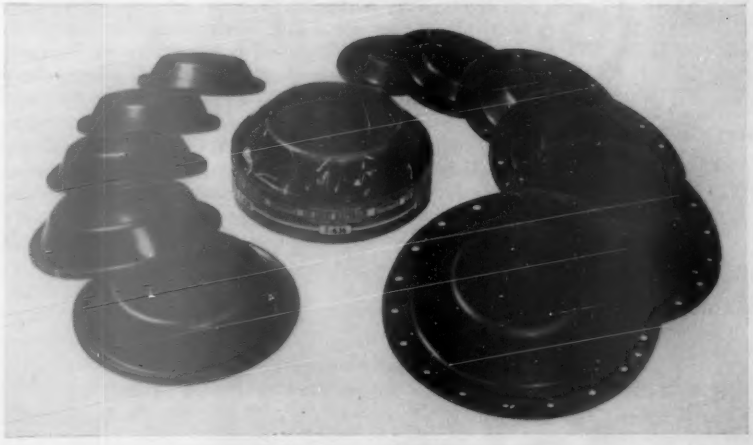


Inspection instrument . . .

. . . that is portable and magnetic and weighs only 42 lbs has recently been placed on the market.

Based upon the proven magnetic particle principle of inspection, the instrument immediately detects any crack in any ferrous metal casting. The unit is of rugged construction, yet is light enough to be carried anywhere.

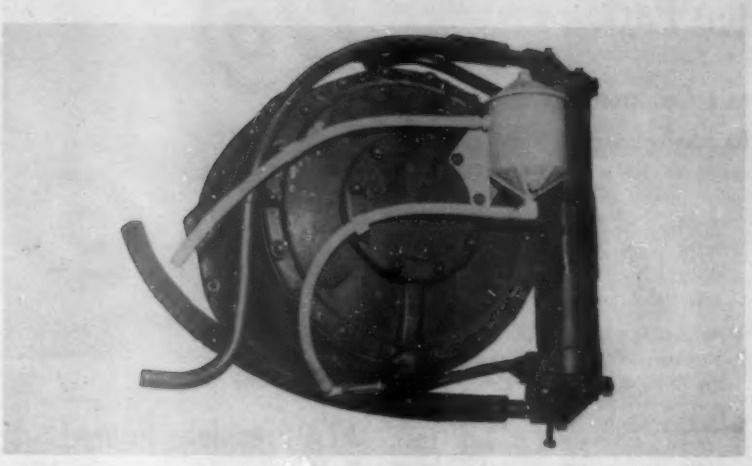
It will not only detect minute cracks not visible to the eye, but will also outline the extremities of visible cracks and inspect blocks and heads fast and accurately. For details write *Chain-Lock Process Co., 2500 E. York St., Phila., Pa.*



Air brake diaphragm . . .

. . . designed for clamp-type air brake chamber is now on the market.

The new diaphragm is being manufactured to take full advantage of the superior wearing qualities of neoprene and nylon. The diaphragm is said to give greatly improved performances over conventional rubber and cotton construction. The new materials and special construction features prevent oil deterioration and reduce the possibility of fatigue cracks and other failures. The neoprene is reinforced by heavy duty nylon fabric which increases tensile strength. For details write *Thermoid Company, Trenton, N.J.*

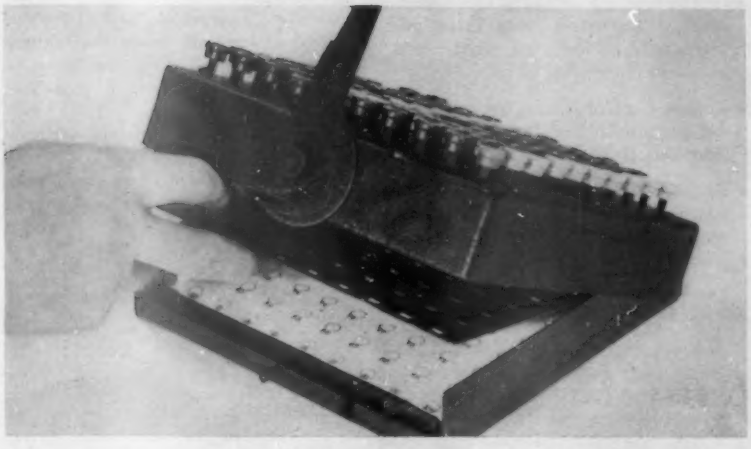


Micronic oil filter . . .

. . . with replaceable cartridge for all GMC V-Drives is now available.

The filter eliminates scavenge pump filter and danger of its clogging, with consequent clutch slipping and overheating. Full flow filtration for converter, bypass filtration for whole transmission. Micronic filter removes particles ¼ the size screened out by scavenge filter.

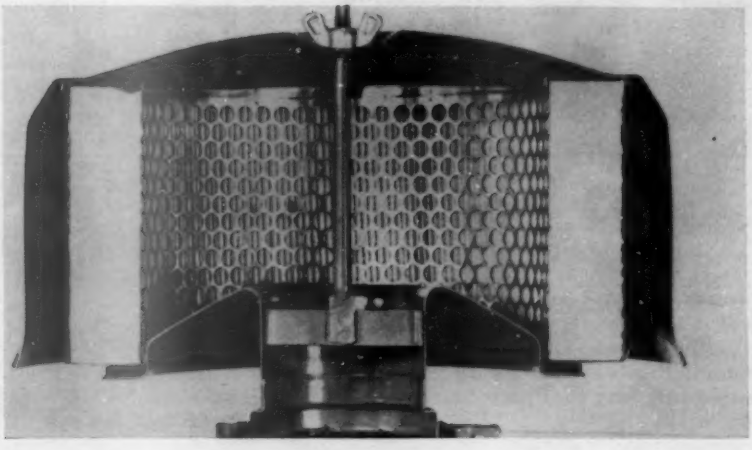
Cartridge element contains 480 square inches of filtration area. Special bypass valve in filter supplies fluid to converter if filter ever becomes clogged. For further information write *Transit Products, Inc., Prairie View, Ill.*



New Attendicorder . . .

. . . that automatically records school bus traffic has been announced. The Attendicorder is a complete card-punching device which automatically records a permanent daily attendance sheet, trip by trip, before each school bus pulls out.

The unit comes in two models, one to handle loads of 80 and the other up to 100 children per bus. Easy to install and to operate, the attendicorder is positioned at the right of the driver, who, with one hand, depresses each child's number as he boards his bus. The unit is small and compact. *Robert E. Tompkin, Inc., 751 Clay Road, Rochester, N.Y.*



Dry-type air filter . . .

. . . capable of screening out dirt particles measured in microns (1/39 millionth of an inch) is available.

The filter, which protects the engine from abrasive particles mixing with the fuel, works without the use of baffles or oil, and has a life expectancy of around 15,000 miles under normal conditions. The dry air filter is said to be far more effective in stopping small particles from entering the engine than previous type filters. The filter not only helps protect the engine against wear and tear but helps the engine perform at peak power. *Purolator Products, Rahway, N.J.*

Continued on page 60

Industry In Review

D.C. Transit, Union Sign Pact

● Successor to Capital Transit Co. assured three years of labor peace . . . agrees to higher wage scale.

• The D.C. Transit System and Local 689 of Amalgamated have officially signed a wage agreement for three years calling for four five-cent-an-hour increases. Also included are a two-cent cost-of-living increase and a provision calling for arbitration of any grievances resulting from future contract renewals.

The union unanimously approved the contract in its final draft after both parties had previously reached a tentative agreement. The new contract will run until Oct. 31, 1959.

The new agreement covers approximately 3,000 employees, will give operators a five-cent-an-hour wage boost retroactive to Aug. 15. Added to it will be the two-cent cost-of-living boost, which becomes permanent.

Three subsequent five-cent hourly wage increases will become effective in November of 1957, November of 1958 and April of 1959.

Under the agreement, vacation requirements will be eased in two stages —after July 1, 1957 employees with seven years service will be eligible for three weeks vacation. Presently, those who have been on the job for ten years are eligible for three weeks.

Four-week vacations, previously granted after 25 years of service, will now be given after 20 years.

In July of 1958 the second stage will become effective: Employees with five years of service will be eligible for three weeks and four weeks will be granted those who have worked for the company for a total of 15 years.

The contract also calls for the adding of an eighth holiday, Nov. 11, Veterans Day; and effective Aug. 1, 1958, holidays will be paid even if they fall on days that operators would normally be off.

The pact provides for time-and-a-half pay after a ten and a quarter hour spread, instead of ten and a half hours.

Other provisions of the three-year contract call for:

• Immediate contribution of $10,000 to the health and welfare fund. Starting Nov. 2, 1958, the company is to contribute an additional two dollars per month per employee into the fund.

• Arbitration of new or renewal agreements by a five-man board of arbitration.

• Increasing of guarantee for extra operators, effective Nov. 3, 1957, from six hours daily and 35 hours weekly to seven hours daily and 38 hours per week.

• Increasing of evening and night shift differentials from three and five cents to five and eight cents, effective November of 1957.

• Elimination of Class C mechanics by promotion to Class B, effective Aug. 17, 1958.

• Reclassification of various maintenance employees effective immediately.

Arkansas Bus Men Meet

• The Arkansas Bus and Truck Association held a two-day convention last month at Little Rock, Ark., with president Rodney Stewart presiding.

Among the speakers at the 24th annual session was George Alexander Bowie, author and lecturer and a public relations counselor for the Firestone Tire and Rubber Co.

Officers were to be elected on the second day of the convention during a general business meeting.

Court Suspends PTC Dividend

• The 30-cent dividend declared by the Philadelphia Transportation Co. and disputed by the city has been suspended by the Pennsylvania Supreme Court. The payment would have totaled $516,000.

PTC insists it is within its rights . . . says its assets are over $100 million. But the city says liabilities exceed assets, and the firm cannot pay dividends.

Paul O. Dittmar

ATA President Injured Following Meeting in NY

• Paul O. Dittmar, elected just three months ago to the presidency of the American Transit Association, was injured last month when the taxicab in which he was riding was involved in a collision with a truck at a New York City intersection.

Dittmar had just finished addressing the meeting of the New York State Motorbus Association and was on his way to the airport. He was taken, however, to Roosevelt Hospital where it was expected he would be confined several weeks with a fractured hip.

Initial examination also disclosed lesser injuries. It was expected that the hip injury would curtail his activities for several months at least.

Mrs. Dittmar, who accompanied her husband East, was not in the cab at the time of the accident, having planned to stay in New York for an additional day. It was reported she would remain with her husband until his release from the hospital.

Mack Splits Common Stock

• Shareholders of Mack Trucks, Inc., will receive a Christmas gift in the form of one additional share of Mack common stock for each three shares they now hold. In effect, it's a four-for-three stock split.

At the same time, the board of directors announced a cash dividend of 45 cents for the first quarter of 1957. The dividend will be paid on the outstanding stock resulting from the split.

President P. O. Peterson reported third quarter sales for this year were substantially better than last year.

Please Be Careful and No Lip

• A voice from nowhere is now being used to remind passengers on Yonkers Railroad Co. buses to take care when they alight. The little man who really isn't there automatically warns patrons: "Watch your step, please."

It's just another first for Yonkers in the form of an experiment to improve the quality of service offered by the firm, and to lend emphasis to YRC's intensified safety program.

The electronic unit used is a modified tape recorder with a special cartridge, and it's converted to operate on 24 v rather than the 110-115 v current usually available.

The four-in. speakers are located in each of the step wells and the entire unit measures a small eight by six by four in.

The company tests are designed to get public and driver's reactions. The equipment is strictly in the experimental stage, but will be developed during and after the test period.

The unit is sure to raise envy in short-tempered drivers, however. The passenger doesn't stand a chance of talking back.

Buses May Help Balloting

• The Calgary Transit System may help "get out the vote" come next election time.

Under a bus-aid for balloting plan under consideration by Calgary Mayor Don Mackay, special election transfers would be printed to encourage passengers to vote on their way home from work.

The idea came from a citizen who explained that many homegoing workers would have to buy an extra bus ticket if they left the bus to vote at their polling station and then boarded another to go home.

Air Signals Ordered on Buses

• The Illinois State Commerce Commission has issued an order providing that on or before April 1, 1957, all public buses being operated in that state must be equipped with air pressure gages and low air warning signals to insure effective operation of the brakes.

The order further provides for the testing of this equipment by the commission inspectors as part of their regular inspection procedures starting next April.

Action by the commission followed a hearing upon a petition of the Illinois Bus Association for a review of the commission's safety regulations.

West Coast Operator Sells Lines

• Auto Interurban Lines of Spokane has sold three intercity bus routes, including licenses and equipment, to Greyhound Lines, Inc., of Chicago for $187,473. A fourth intercity route, with one bus, was sold to an Interurban company driver for $5,500.

Greyhound also acquired 20 per cent outstanding stock on the bus terminal in Spokane. The three routes purchased by Greyhound include service from Spokane to Colville, Wash. and Trail, B. C.; to Wallace, Idaho; and to Cheney, Wash.

The sale was transacted by T. J. Manning of Elkhart Lake, Wisc. who purchased Auto Interurban lines for $500,000 in March 1956. Manning owned city systems at Sheboygan, Fond du Lac and Appleton, Wis.

The Interurban firm operated 26 buses in eastern Washington, northern Idaho and southeastern British Columbia at the time Manning bought it. With the sale to Greyhound, the firm will operate only as a transit service between the Spokane Valley, a residential area of 40,000 persons directly east of the city of Spokane, and the downtown area.

F. E. Landsburg, district director of the Interstate Commerce Commission at Portland, Ore. said tentative approval for the Greyhound purchase was dated Sept. 20. No objections have been entered.

The driver, Eric H. Thunberg, bought the Auto Interurban route between Spokane and the northeastern Washington mining community of Metaline Falls. For its valley transit service, Interurban kept 22 buses.

850 Buses Ordered for London

• Orders worth about $11,200,000 have been placed with two manufacturers by the London Transport Executive. The orders are for 850 diesel buses—delivery to start in 1958.

Diesel buses were chosen over trolley buses, the company said, because of their greater mobility in traffic, their flexibility in operation and ease of integration with existing services.

Streamlined Shades of Fifth Avenue

Sightseers in Paris will certainly be able to get a low-flying "bird's eye view" of that famed city if they make the rounds in this modernized version of Fifth Avenue's old open-air double-deck bus. Built by Berliet, the bus has smooth, sweeping lines and extra wide windows. Contrast it with the bus in the background which probably plies the avenues in more down-to-earth transit service.

LA Planning Group Urged for Rapid

• Formation of a Los Angeles Basin Area Transportation Planning Commission to draw up a coordinated rapid transit plan for Los Angeles and four Southern California counties was recommended by the Los Angeles Citizens Traffic and Transportation Committee, which was named by Mayor Poulson more than two years ago to study the area's transportation problems.

Chairman Robert L. Gordon said the committee's recommendations are largely in conflict with recent proposals of the Los Angeles Metropolitan Transit Authority to commence purchasing local transit facilities as the first step toward government operation of transit systems.

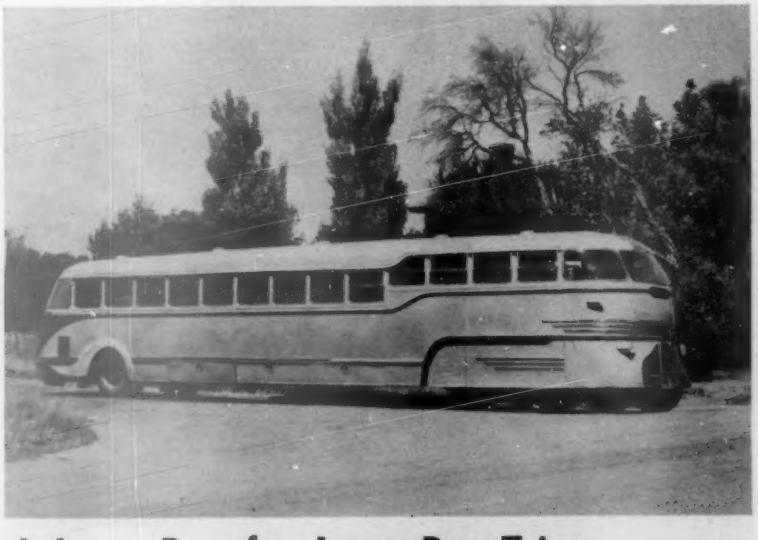
"The citizens committee," said Gordon, "still believes it is unwise to spend vast sums of the public's money on a segment of a transportation system and at the same time in effect irretrievably abandon private enterprise in favor of government ownership and operation without first determining whether or not this activity fits into a general and accepted plan."

Gordon said the committee "reaffirms its opposition" to legislation by the Transit Authority to gain its objectives, which failed to pass the 1955 state legislature, and a modified version scheduled to be presented to the 1957 state legislative session.

"This committee," Gordon added, "has not been able to bring itself to believe that any start is a good start even if it is in the wrong direction. We feel that good business sense calls for proper planning before any important move toward implementing a transportation system is made."

The citizens committee called for appointment of a new commission by the governor. The city and the four counties would be represented on a population basis. Half of the expenses of the commission would be borne by the state and half by the four counties.

"At no time," Gordon said, "has the committee contemplated an agency to 'control' the vast facilities for the movement of goods. The movement of goods should be considered in any transportation plan only in a coordinated sense so that the movement requirements for goods and merchandise could be coordinated with the facilities for moving people."



A Long Bus for Long Bus Trips

If you're heading "down under" for the Olympics this year, you may get to see the luxury bus of the Australian intercity industry. Called the "Cheetah," this motorized mastadon is supposed to have incorporated in it the comforts and luxury of an airplane. Painted cream and red, the bus was to have been placed on the 600-odd mile run between Melbourne and Sydney. Our only comment: Australian roads must all be built like turnpikes with long gradual turns. Otherwise, this baby would never get around a corner.

Smog Reducers Ordered

• Smog-burning devices have been ordered installed on its school buses by the Los Angeles school system.

Of the 2,000 gasoline-fueled buses in the county, 89 are owned by the city school system.

The Air Pollution Control District, which is drafting a law to require all buses and trucks using gasoline to install the devices, reports that about a quarter of the total number have already complied.

So far, only 12 of the school buses have been equipped with the device, but school officials state that installation will continue as funds become available.

The device is basically a muffler and after-burner which has proved to be 97 per cent efficient in eliminating smog-producing hydro-carbons from motor vehicle exhausts.

According to district figures, half of the air pollutants contaminating the city's atmosphere are directly traceable to motor vehicle exhausts. With more than 2,700,000 vehicles operating in the area daily, many hundred thousand gallons of hydrocarbons are released into the atmosphere, explained Randall Davis, transportation director for the city school system.

The muffler operates on the principle of self-contained combustion. The proper amount of air is drawn into the combustion chamber of the afterburner to cause complete oxidation of the particles of raw or partially burned fuel carried in the exhaust during normal operation of an internal combustion engine.

All combustion takes place in the combustion chamber. A long-reach ignition spark plug in the chamber provides continuous electric ignition of the mixture of air and exhaust gases at all times, so that afterburner operation is independent of engine operating temperatures.

Bus Pioneer's Wife Dies

• Mrs. Fay Elizabeth Martz, widow of the founder of the Frank Martz Coach Co., died recently after a short illness. Her husband, the late Frank Martz, Sr., died 20 years ago, and their son, Frank, Jr., now heads the intercity company.

Mrs. Martz was active in the early days of the company, assisting her husband in the barn he rented as his first garage in Plymouth, Pa. In recent years she has been active in church and community affairs. She is survived by her son, a grandson and two brothers.

Calendar of Events

A list of activities of interest to the bus industry

January

14-18 Society of Automotive Engineers, Statler & Sheraton Cadillac Hotels, Detroit, Mich.

28-31 Plant Maintenance & Engineering Show, Auditorium, Cleveland, Ohio.

February

4-7 National Automotive Accessories Manufacturers of America, Coliseum, New York City.

14 Illinois Bus Assoc. 32nd Annual Meeting, Congress Hotel, Chicago, Ill.

Iowa Tax Cut Seen Unlikely

• Doubt has been expressed by Iowa State Senator D. C. Nolan, a member of a nine-man committee named by the governor to study urban transit problems, that proposals to aid transit companies by exempting their buses from state gasoline and license taxes would be accepted by the Iowa legislature.

Nolan's opinion was expressed near the end of a session of the study committee at which nearly 150 city officials, representatives of chambers of commerce, transit company managements and bus operators' unions gave their views.

Committee Chairman John Ropes, also a member of the State Commerce Commission, said the various statements, suggestions and opinions would be incorporated in the committee's report to the governor.

After hearing repeated suggestions that one way to help ailing bus companies would be to grant them tax relief, Nolan said it was "doubtful that you'll get it."

Nolan suggested it might be possible to amend the state parking meter law so that cities would not be required to earmark 75 per cent of meter receipts for off-street parking. This, it was pointed out, would free funds to widen or otherwise improve streets and modernize traffic control systems, all of which would help transit companies.

There appeared to be agreement among those at the session that a 1955 state law authorizing cities to levy up to one-eighth of a mill tax for transit subsidies was "impractical" for the reason that the voters wouldn't go along with such a tax.

Would End Transit Competition

• Public transit systems serving an urban area should be under a single management and "direct competition along local transit lines should not be permitted," it was declared in a long-range plan for mass transit in the Louisville, Ky. metropolitan area. The plan was submitted to the Transit Committee of the City-County Planning and Zoning Commission by the St. Louis planning firm of Bartholomew & Associates.

The Louisville area is currently served by eight bus companies, of which Louisville Transit Co. is by far the largest.

It was also recommended that because a mass transit system is a necessary public service, "consideration should be given to supplementing revenues (of transit companies) with public funds in areas where the cost of service is not matched by revenues received.

Another proposal was that parking lots be provided in outlying and fringe areas, possibly with city and county governmental aid. "The interest of the city and county in freeing central streets of unnecessary automobiles justifies governmental participation in construction of new lots," the report on the plan said. "The lots may be either free or subject to a low all-day charge."

Also recommending serious study of existing rapid transit systems that might be adoptable to Louisville's future needs, the report mentioned favorably the monorail system.

The report proposed the operation of 21 bus routes over 16 streets. Four bus routes now in operation would be abandoned and replaced by others.

Harry W. Alexander, senior partner in the Bartholomew firm, pointed out that his study showed that operation of private automobiles is responsible for a marked decline in public transportation use.

From 1947 to 1955, his study showed, the number of passengers carried annually by the Louisville Transit Co. dropped from some 126 million to fewer than 62 million. Registration of automobiles during the same period climbed from 70,000 annually to about 180,000.

"We will never break this trend of individuals riding to town in their own cars until it becomes so inconvenient to drive that people will start leaving their cars at home," Alexander said.

Transit District Becomes Fact

• The Oakland, Calif. metropolitan area has translated into action the regional approach to public ownership of transit for which way was paved by a state law enacted last year.

Twenty-eight communities in Alameda and Contra Costa counties voted Nov. 6 to set up the Alameda-Contra Costa Transit District. They also selected its directors—one for each of five wards and two elected at large.

The directors are to study the existing transit facilities (they can levy a tax to finance the study) and determine how much it would cost to buy and operate the facilities. If they recommend that the district go into the transit business a bond issue to finance purchase of facilities would be submitted to voters of the district.

The two-county transit district was not pictured as an alternative to the proposed Bay Area Rapid Transit Plan, which covers nine counties. The transit district presumably would provide the feeder system for a regional transit operation.

Agitation for public ownership of transportation in the East Bay Area was touched off by prolonged transit strikes in recent years. A 76-day strike in 1953 tied up Key System Transit Lines, and in 1952 Pacific Greyhound Lines operations in Contra Costa County were frozen by an 11-week strike that affected the entire PGL territory.

Last year East Bay legislators sponsored a bill permitting formation of a transit district and setting forth procedures. The bill, which became a law, is basis for the Alameda-Contra Costa action.

The territory covered by the transit district is now served by Key System Transit Lines (trans-bay and local East Bay service) and Pacific Greyhound.

Some parts of Contra Costa County have opposed the transit district. Three small communities elected to stay out of the district.

Bringing the Shopper by Bus

• A new method of getting shoppers into and out of the downtown area by providing free parking and free bus rides is being offered by more than 60 downtown merchants and professional people, varying from department stores to dentists, in cooperation with the city's bus lines and operators of parking lots in Salem, Ore.

A group of downtown Salem businessmen, having formed the Transit-Parking Corp., introduced the new system which used copyrighted "Transit-Parking money." They developed the idea after spending several months in research of congestion and transportation problems in general.

Customers shopping with sponsoring merchants are given "T-P Money" which may be used as fare on the buses and in payment of parking lot charges.

The "T-P Money "is issued as coupons in 5-cent denomination. The customer may use as many of the coupons as he desires, thus possibly enabling him to pay the entire cost of parking or bus fare.

The coupons may be used on the buses or at parking lots from 9:30 a.m. to 4:30 p.m.

This new approach to downtown congestion relief appears to be the low cost, workable, solution that this city, as well as a great many other cities, has been seeking.

'Hound Buys Auto Rentor

• Greyhound Corp. has acquired, through its subsidiary Greyhound Rent-A-Car Inc., the nationwide physical assets of the R. A. Co., Cleveland, one of the pioneer automobile fleet-leasing organizations.

Greyhound President Arthur S. Genet said this action marks a first major step by Greyhound Rent-A-Car Inc. to make it the largest operation in fleet car leasing within a few years.

Looking Back at Baggage

These new-fangled intercity buses with 200 cubic feet of baggage space have nothing on these old jobs which literally had the sky as their limit. Perhaps it was a little harder to load up a bus in those days, but as long as you had it packed in solidly you never had to worry about where your toothbrush was. Scene of this feat of strength was the Dixie Terminal in New York City about 20 years ago.

Industry Briefs

New buses went into service on another Philadelphia Transportation Co. route last month, bringing to 850 the number of new buses placed in service by the firm. Another 150 are still on order.

The new buses were used to replace older equipment which in September replaced trolleys. The new vehicles are equipped with air suspension springing.

Fare adjustments that Niagara Frontier Transit System hoped to make effective on Nov. 18 have been suspended by the New York Public Service Commission.

A new tariff filed with commission called for an increase in the adult token fare from six for a dollar to five for 95 cents, and elimination of a student and children's token rate of seven and a half cents.

Sacramento's special buses, run in conjunction with the state fair during September, were largely responsible for returning the largest net profit since the system was taken over by the city. In that month, the Sacramento Transit Authority reported a net profit of $14,449 on total operating revenue of $134,062.

Los Angeles' Metropolitan Coach Lines has inaugurated a park-ride program using the Hollywood Bowl parking lot and utilizing the Hollywood Freeway to speed passengers to downtown Los Angeles.

This marks the first time such a service has formally instituted (many riders parked in fringe areas and took the buses) in cooperation with city, county and state authorities.

Christmas schedules designed to get shoppers home after the 9 P.M. store closing time have been instituted by the Cleveland Transit System.

In addition, one store in downtown Cleveland has chartered several buses which will offer free service to its patrons.

The store will offer the service until Dec. 29.

Twenty-two buses that have seen their better days are ready at St. Louis Public Service Co. to take on their regular winter roles of salting streets.

The buses are replacing all trucks that were previously used to spread cinders and salt.

Seven of the vehicles are equipped with two-way radio and will be used in emergency service.

Each of the 22 snow fighters carries approximately five tons of salt, which is loaded through roof hatches.

The Fare Box

• Here is a spot-check of the current fare picture throughout the country. The following are those fare increases which have recently been requested or approved.

Increases Asked

Delaware Coach Co. Del. • Requested a token fare raise from five for 70 cents to four for 70 cents. Cash fares from 15 to 18 cents.

City Coach Lines, Inc. N. C. • Would like to raise bus tickets from four for fifty cents to seven for $1.

Mountaineer Bus Lines Inc. W. Va. Seeks to raise fares from 10 cents to 15 cents.

Niagara Frontier Transit N. Y. • Would like to raise adult tokens from six for $1 to five for 95 cents and children's fares from 7½ to 10 cents.

Buechel Bus Co. Ky. • Seek to raise fares from 30 to 35 cents.

Philadelphia Transportation Co. Pa. • Asked permission to increase token fares from five for 90 cents to six for $1 or a weekly commutation strip of 10 for $1.50.

South Miami Coach Lines, Fla. • Seeks to raise the present 10 cent fare to 15 cents.

Charlotte City Coach Lines, N. C. Seeks permission to raise present rate of four tickets for 50 cents to seven tickets for $1.

Increases Granted

Peninsula Bus Lines, Calif. • Granted an increase from 15 to 25 cents on routes between Daly City and Colma. Adult fares were lowered from 25 to 20 cents and children's fare from 15 to 10 cents on a line between Colma and S. San Francisco.

Indianapolis & Southeastern Trailways, Ind. • Granted an increase from 35 to 45 cents between downtown Indianapolis and Fort Harrison.

Hamman Stage Lines, Ore. • Granted an increase from 20 to 25 cents and minimum round-trip from 40 to 45 cents.

Cleveland Transit System, Ohio • Raised its ticket fare 1½ cents.

330 Years of Bus Industry Service

• More than 330 years of total service to bus transportation are represented by the combined service records of these 11 Seattle, Wash., employees of Northwest Greyhound Lines. C. E. Graves, president and general manager of Northwest Greyhound, himself a 30-year veteran is shown placing a 30-year pin on the lapel of A. A. Luckovich, baggage and express employee.

Left to right were Ray Gibson, mechanic; Luckovich; W. R. Clark, shop superintendent, Olaf Knudsen, baggage and express; Graves; L. L. Louvier, dispatcher; M. M. Button, dispatcher, in the rear; E. N. Seagle, accountant; A. J. Wright. vice president and comptroller; E. J. Pearson, accountant; and T. J. Grant, new western division superintendent transferred from Spokane to Seattle. Graves was presented with his 30-year pin by Wright.

Dissatisfied Rider Takes Action

• A Philadelphia trolley car passenger was less than happy with his ride recently, but unlike passengers who are content to grumble, he did something about it.

Anthony Di Salva, reported the Philadelphia police, jumped from his seat took a sock at the motorman, getting him in the eye, hit a fellow passenger with the streetcar control handle and then led the police and other angry pursurers on a four-block chase before being apprehended.

Both the motorman and the fellow passenger were hospitalized for treatment and trolley traffic was tied up until a relief driver arrived.

Di Salva said, as he was booked for aggravated assault and battery and disorderly conduct:

"The passengers were being jolted around and I got irritated. I stood it for five blocks and then I couldn't take it any more."

MoPac Sells Its Bus Subsidiary

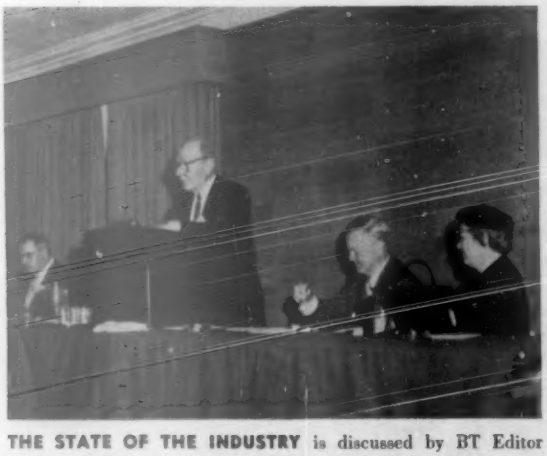
• The Missouri Pacific Railroad has sold its bus subsidiary, Missouri Pacific Transportation Co., to Trammell Crow, Dallas manufacturer and real estate man.

The price paid for the bus company, which operates some 200 buses over 5,326 route miles, was not officially disclosed, but was said to be "considerably in excess of one million dollars."

Included in the assets of the company is property in downtown Kansas City, Mo., and an extensive commuter bus service in the Kansas City area.

ATA PRESIDENT PAUL DITTMAR as he addressed the New York Motorbus Association on the need for revitalization.

THE OLD AND THE NEW. Retiring president James Conway, left, Bee Line, greets new prexy William Lang of Rochester.



THE STATE OF THE INDUSTRY is discussed by BT Editor Earl F. Theisinger, who urged bus men to ride buses.

MANUFACTURERS WERE REPRESENTED, too. Above are F. B. Arnold of Thermoid and Frank O'Shea of Motor Devices.

New York State Association Hears Dittmar

• Paul O. Dittmar, president of the American Transit Association and of South Suburban Safeway Lines in Harvey, Ill., drew an enthusiastic ovation from the members of the New York State Motorbus Association when he addressed its members during the association's 22nd annual meeting, held at the Hotel Roosevelt in New York City on November 11, 12 and 13.

Dittmar spoke on the need for an entirely new approach to the transit industry, including his plan, first broached at ATA's annual meeting in St. Louis, to mobilize riders as a potent political force to get their fair share of the streets and their fair share of tax relief, etc.

He also described a dream club bus which he is planning to operate in the near future, which will include such features as a continental breakfast during the morning trip, and a cocktail bar for the homeward bound commuters in the evening.

Other speakers were Charles Patterson, chairman of the New York City Transit Authority, who spoke on transit in New York City; Ben West, mayor of Nashville, Tenn., who discussed the city and public transportation, and Glen R. Bedenkapp, New York PSC member, who described transit's role in the future.

At the second business session George W. Anderson, executive vice president of ATA, described the industry's plans for progress, while consumer analyst Perry Meyers spoke on the close relationship between a city's retailers and its public transportation system.

John F. Curtin, of Simpson & Curtin, discussed labor developments in the transit field.

There was also a report on new bus design, submitted by J. A. Moreland, vice president and James P. Moreland, chief engineer, both of Fifth Avenue Coach, and Robert Tyson, of Mack Trucks, Inc.

At the final business session speakers were Edward F. Jannott, of the New York Public Service Commission; Earl Theisinger, BT editor; Helen Hurd, of Rutgers University, and Dittmar.

ABOUT PEOPLE . . .

W. W. Churchill has been promoted to vice president of Northwest Greyhound Lines. He has been assistant general manager since 1947 and will continue in that position with added executive duties.

Warren D. Enyart has been promoted to the position of director of tours and charters for Eastern Greyhound Lines. He has been associated with the lines since 1928. He replaces S. O. Wall, who retired.

Richard J. Fencl has been named as president of the Greyhound corporation's Rent-A-Car Inc. He has been associated with the Texas Company and recently owned his own automobile sales agency.

J. S. Brock has been appointed as superintendent of Cremazie and Youville shops for the Montreal Transportation Commission. The company recently merged certain departments under one authority.

Guy L. Blain has been appointed to the position of superintendent of operating garages and car barns for the Montreal Transportation Commission in keeping with the firm's modernization program.

George T. Fox who has been in charge of the brake drum and tandem divisions of the Reynolds Manufacturing Company for more than 25 years has been named president and executive officer of the company.

Charles E. Heitman, Jr., assistant general manager of A. O. Smith Corp., has been named as president of the Carter Carburetor Division of ACF Industries, Inc. He succeeds Magnus Peterson, who retired.

Walter L. Brough, assistant to the president of Hercules Motors Corporation, has been promoted to executive vice-president. With the firm for two years, he formerly was with Timken Roller Bearing.

K. H. Zinsmaster has been promoted from director of purchases to manager of procurement and production planning for the Aro Equipment Corporation. He has been affiliated with the firm since 1931.

T. J. Grant, formerly eastern division manager for Northwest Greyhound Lines at Spokane, Washington, has been promoted to the position of western division superintendent. He will make his headquarters in Seattle.

Ralph E. James, vice-president of National City Lines, Inc. and **Don R. Killan,** regional manager of the Chicago-Calumet District Transit Company, have been elected to the board of directors of the Indiana Bus Association.

David N. Phillips, former vice-president-public relations of the Philadelphia Transportation Company, has rejoined PTC as assistant to the president.

David S. Haddock, vice-president of the A.B.&W Transit Company has been re-elected president of the Virginia Passenger Bus Association.

Other officers re-elected were: **Burkett A. Rennolds,** vice-president, and **Cecil E. Hall,** secretary-treasurer.

Blair M. Amole, vice-president of Atlantic Greyhound Lines, has been elected president of the West Virginia Bus Association.

Other officers elected were: **J. A. Battaglia,** Pittsburgh-Weirton Bus Co., vice-president; **M. S. Aldrich,** managing director and treasurer; and **Miss Betty Pauley,** secretary.

R. F. Randolph, executixe vice-president of the Charleston Transit Company, has been elected president of the Charleston Chamber of Commerce.

S. G. Down, former first vice-president and director of Westinghouse Air Brake Company, died recently.

Forest E. McGlothlen has been named superintendent of transportation for Des Moines Transit Company.

He formerly was assistant transportation superintendent.

John O. Clark has been appointed sales engineer in the west central division for Bendix Products, automotive service sales department. He formerly was with Electric Auto-Lite company.

David A. Jones, former sales promotion manager for A. Schrader's Son Division of the Scoville Manufacturing Company, has been named accessories sales manager of tire valve manufacturing.

G. Paul Laub has been named manager for Greyhound bus depot at Great Falls, Mont. He has been with Greyhound since 1942.

Henry Aikens has been appointed superintendent of transportation for Philadelphia Transportation Company's subway and elevated lines.

He succeeds **Vincent D. Murphy** who recently retired after 40 years of service with the company.

E. A. Spencer has been named special representative for national accounts of the Electric Auto-Lite Company.

Jeremiah Haggarty, transit department superintendent of the Public Utilities Commission, Port Arthur, Ontario recently retired after 43 years of service with the commission.

Arthur Gravelle, his assistant for a number of years, has taken over Haggarty's job.

Carl E. Chambers, supervisor of Atlantic Greyhound Corp., Portsmouth Division, recently retired after 38 years of service.

J. E. Wright has been appointed district manager of the Syracuse, N. Y. branch office of Mack Trucks, Inc.

With Mack since 1925, he was formerly wholesale salesman in the eastern division office in N. Y.

Robert W. Schuster, truck tire specialist from Seiberling Rubber Company's New York sales district has been named assistant manager of the firm's truck tire sales department.

A. Trail has been appointed as manager of the Vickers Inc., Rochester, N. Y. district sales office.

Thomas J. Liddell has been named as application engineer for the firm.

L. L. Dodge has been appointed assistant general sales manager of the Dana Corporation.

G. Leonard Smith has been named mid-western representative for the Dana Corporation. He formerly was with Perfect Circle Corporation.

P. A. Gaglardi, highway minister of British Columbia has been named as president of the Canadian Good Roads Association.

Snowman W. Doe has been named as bus service manager for Mack Trucks Inc. He has been associated with Mack since 1949.

Michael J. Fraino has been named off-highway service manager. He has been with the firm since 1939.

BUS AND TROLLEY BUS DELIVERIES

Motor Bus Deliveries	Number of Buses	Manufacturers	Model and Type	Seat
Camden & Burlington Counties Bus Co. (N.J.)	2	GMC	TGH-3102	31
Dept. of Street Railways, City of Detroit (Mich.)	30	GMC	TDH-5105	51
Grand Rapids City Coach Lines, Inc. (Mich.)	2	GMC	TDH-5105	51
Kansas City Public Service Co. (Mo.)	40	GMC	TDH-5105	51
Kerville Bus Co. (Tex.)	2	Beck	Semi D & H	41
Mayflower Transit Lines, Inc. (N.Y.)	2	GMC	TGH-3102	31
Metropolitan Transit Authority (Mass.)	3	GMC	TDH-5105	51
Milwaukee & Suburban Transport Corp. (Wis.)	30	GMC	TDH-5105	51
Philadelphia Transportation Co. (Penn.)	77	GMC	TDH-5105	51
Miscellaneous Deliveries				
United States Government	17	Southern	R-37	37
Foreign Deliveries				
Carier & Frere Ltee. (Quebec)	4	Fitzjohn	Road-Runner	41
Distribuidora de Omnibus (Mex.)	6	Fitzjohn	Duraliner	32
General Motors Overseas Operations (N.Y.)	1	GMC	PD-4104	41
Transporte del Norte (Mex.)	1	Beck	Semi D & H	41

Total deliveries reported in this issue . . . 217

Note: This list is based on monthly reports from manufacturers. Not all manufacturers report regularly, consequently this list is not to be considered complete.

Thanks, Mr. Lorin, for these kind words!

SIOUX FALLS TRANSIT, INC.

TELEPHONE 4-5628 ● 100 SOUTH FRANKLIN AVE., SIOUX FALLS, S

Howard Falen Oil Company
512 East 13th Street
Sioux Falls, South Dakota

Dear Howard:

We have used Phillips 66 Heavy Duty Motor Oil in our transit buses going on two years.

When we first started using this oil, we installed a new Ford engine in Bus No. 49. Recently we dismantled this engine, after it had run 93,966 miles. We found very little sludge, block wear was .020, bearing wear .008 and the rings were in good shape. We believe this engine could have run another 25,000 miles.

We believe that Phillips Petroleum Company should be complimented on developing this remarkable motor oil that helps bus operators save operating money and prolong the life of equipment.

Our buses operate 2,400 miles a day using Phillips 66 products and we find them satisfactory in every way.

Sincerely,
SIOUX FALLS TRANSIT, INC.
H. H. Lorin
H. H. Lorin, General Manager

H. H. Lorin, general manager, Sioux Falls Transit, Inc., Sioux Falls, South Dakota, wrote letter at left to Howard Falen, Phillips distributor in that city.

Take a tip from Sioux Falls Transit and get performance that counts in more operating profit. A Phillips 66 lubricating engineer will be glad to assist you, free of charge. Write: Sales Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

It's Performance That Counts!

Phillips 66

PHILLIPS 66 HEAVY DUTY MOTOR OILS

* * *

you can take the word of a few of the many bus operators who know from experience that

WAGNER ROTARY AIR COMPRESSORS...

*

"...really keep air pressure up for greater safety."

PAUL G. CONNOR, Operating Manager
Inter City Bus Lines —
Mission, Kansas

*

"...give plenty of air pressure for safe braking at all times."

WILLIAM TESSIEN, Supt. of Maintenance
Bluebird Coach Lines, Inc.
Lyons, Illinois

*

"...cost less for proper maintenance and provide greater safety."

HARRY W. OELSCHLAGER, Supt. of Maint.
Oriole Motor Coach Lines, Inc.
Pittsburgh, Pennsylvania

Wagner Rotary Air Compressors are considered standard equipment by many of the leading bus companies from coast to coast. These bus operators know from their own performance and maintenance records that Wagner Rotary Air Compressors are safe—sure—and economical to operate. They build up air pressure quickly, eliminate heat in discharge lines, stop carbon formation in air lines and valves, and substantially reduce friction loss and fire hazard.

Wagner Rotary Air Compressors are only part of the complete braking safety and economy provided by Wagner Air Brake Systems. The new, fully automatic Wagner Moisture Ejection Valve is especially designed to keep air reservoirs clean and moisture free—and because this valve cannot "freeze" in open position, the time required to build up air pressure during warm-ups in cold weather is substantially reduced.

For straight air systems, Wagner offers a choice of either power cylinders or nylon and neoprene diaphragm brake chambers.

The metering characteristics of Wagner Treadle Type Application Valves permit bus operators to regulate the degree of deceleration to meet any stopping need or emergency.

So, if you consider safety and performance economy important to your bus operation, it will pay you to learn the full story on the completeness of Wagner Air Brake Systems. Request today that a free copy of Wagner Bulletin KU-201 be sent to you. There is no obligation, of course.

K56-9

Nothing beats the controlled safety protection of complete Wagner Air Brakes

WAGNER ELECTRIC CORPORATION, 6461 PLYMOUTH AVENUE • ST. LOUIS 14, MO., U. S. A.

Wagner Air Brake Systems

LOCKHEED HYDRAULIC BRAKE PARTS and FLUID • HeRoL • CoMoX BRAKE LINING • AIR BRAKES • AIR HORNS • TACHOGRAPHS • ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

$20,000 holdup

Grand larceny, that's what it is—when dead batteries prevent on-time fleet deliveries. Play safe, be sure with an Extra-Duty Delco Battery—its warranty means what it says!

Delco Batteries are built for long life—that's why they are backed by long-life warranties, good in the United States or Canada.

Back of Delco's matchless performance and longer life is something equally matchless: the combined research and engineering skills of Delco and General Motors. No wonder General Motors Proving Ground tests show performance far surpassing the normal demands of any fleet service.

Dry or wet charge, Extra-Duty Delco batteries give you the lowest possible cost per mile of operation—and Delco batteries are available *everywhere*.

available everywhere through Delco Battery Distributors

TUNE IN
ON TV . . . Spectacular "Wide Wide World" on NBC Network.
ON RADIO . . . Lowell Thomas Newscast on CBS Network.
See your local listings for time and station.

GM
GENERAL MOTORS
PARTS SALES
UNITED MOTORS SYSTEM

Fm *sintered* copper-lead bearings . . .

for heavy-duty performance they have no equal!

From that pile of powder comes the copper-lead lining that means maximum mileage in heavy-duty bearings. Each tiny powder particle is a grain of alloy of controlled copper-to-lead proportion. When the powder is sintered on steel strip it makes a tough, durable bearing lining of unmatched mileage-producing performance!

With the same care we apply the brass barrier plate which assures lining stability, the lead-tin overplate which eases break-in, and the flash plate of pure tin which adds corrosion resistance. It is the know-how in bearing manufacture for heavy-duty use that has made Federal-Mogul first choice for replacement . . . preferred by fleets 2 to 1. Call your jobber!

FEDERAL-MOGUL SERVICE

Division of Federal-Mogul-Bower Bearings, Inc.

Fleet BEARING FEDERAL Mogul SERVICE *Mileage*

BUY IT FROM YOUR JOBBER

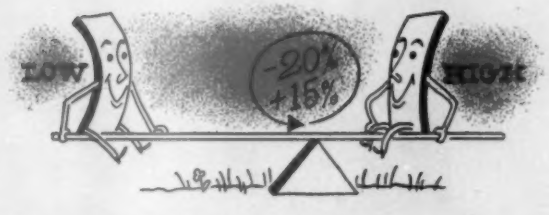
Johns-Manville Information Service Bulletin J-M 106

Prepared by the Automotive Friction Material Division

The importance of Coefficient of Friction to the performance of your brakes

The degree of "stop-ability" built into a brake block is usually referred to by engineers as its Coefficient of Friction (μ).

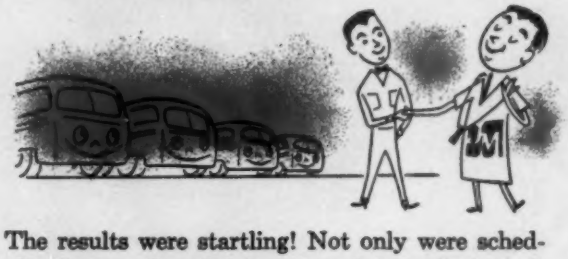
Selecting a brake block of high Coefficient (possibly .55 as used in hilly sections) will usually give shortest stopping distances. But too-sudden stops and accompanying weight transfer of heavy payloads worry drivers. Also, higher friction blocks may affect other performance qualities such as long life, freedom from scoring and the fine, uniform friction stability found in blocks of medium, or lower friction.



Today, many individual brake mechanisms can be improved by skillfully balancing the braking effectiveness of each wheel through the use of Johns-Manville Brake Blocks of different Coefficients. Depending on the selection of high, medium or low friction, variations of 15 or 20 percent can be corrected. In turn, this simplifies balancing the entire system so that all wheels work proportionately and give lowest cost-per-mile brake service.

Johns-Manville Field Engineers are available to help study your fleet operation and assist you in selecting the precise brake blocks which best match your particular operating conditions.

Recently one team of these experts was called in by a mid-west city transit fleet. The operators, who kept meticulous records, decided to act on new recommendations based on findings of a comprehensive engineering survey.



The results were startling! Not only were schedules improved and driver complaints eliminated, but Johns-Manville Brake Blocks helped reduce drum breakage and lining wear by 30%.

Write today for helpful information on any brake problem. Address Automotive Manager, Johns-Manville, 22 East 40th Street, New York 16, New York.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville *Asbestos* FRICTION MATERIALS

BRAKE LININGS • BRAKE BLOCKS • CLUTCH FACINGS

"We average 350,000 miles between with Gulflube

says Julian T. Kelly, Supt. of Maintenance, Cincinnati Transit Company

"**I'm awfully strong** for Gulflube H.D. and I've got good reason to be," says Mr. Kelly. "We run our vehicles 150,000 miles before *any* overhaul and between 300,000 and 400,000 before a major overhaul. You get an idea of how important this is when you realize that our fleet does 1,250,000 miles per month!

"Naturally we must have clean-running engines to get this kind of mileage and we can't have gummed up filters or clogged up screens. We don't have either with this oil.

"Yes, for economical operation, it's Gulflube H.D. as far as I'm concerned."

Performance attributable to high quality

Gulflube H.D. will do the job for *your* fleet, too. It has been specifically engineered for *both* gasoline and Diesel engines in heavy duty service.

The strong oil film of Gulflube H.D. gives you superior lubrication under severe operating conditions. A high-quality detergent oil, it keeps rings clean and free, assuring better compression and proper oil control.

Find out more about how Gulflube Motor Oil H.D. can help you reduce maintenance costs by getting in touch with a Gulf Sales Engineer through the pages of your phone directory.

The finest petroleum products

major overhauls

Motor Oil H.D.!"

H. F. Yoder (left), Gulf Sales Engineer, pays his regular visit to Julian T. Kelly, Superintendent of Maintenance of the Cincinnati Transit Co., Cincinnati, Ohio, to talk over maintenance problems. This company operates 351 units.

for all your needs

GULF

GULF OIL CORPORATION

GULF REFINING COMPANY

It isn't the same old grind...

It isn't the same old grind because smooth, powerful, SIOUX Sanders and SIOUX Abrasive Discs operate with cost cutting speed and ease. SIOUX Sanders are precision engineered and quality built for fine performance. And there's a dependable SIOUX Sander to meet each requirement. It's an investment you'll feel good about as it repays you with year after year of dependable service.

SIOUX Resin Bond Abrasive Discs cut fast and last long. Tempered aluminum oxide grain assures maximum action. They are tough and flexible. Cutting action is not affected by grinding heat. Industrial, Regular, and Open coat types are available for each purpose.

No. 1250 9" High Speed Heavy Duty Sander

No. 1267 7" High Speed Heavy Duty Sander

No. 1256 7" Lightweight Electric Sander

and

USE SIOUX ALL THE WAY THROUGH

STANDARD THE WORLD OVER...

ALBERTSON & CO., INC.

SIOUX CITY, IOWA, U.S.A.

ELECTRIC IMPACT WRENCHES • GRINDERS • FLEXIBLE SHAFTS • POLISHERS • DRILLS
HAND SAWS • SANDERS • VALVE FACE GRINDING MACHINES • ABRASIVE DISCS

Low Cost Garage

Continued from page 37

A square foot now costs 28 cents. A year ago it cost 16 cents.

An important point to consider in putting up a garage of similar construction is the usual method of charging for such a job. Pole-type construction usually requires a rigger, and charges for linemen are often on a portal-to-portal basis. The Conover brothers were fortunate in this respect. The contractor who put up their building was located right in Chester.

In one area of construction the Conover brothers spent a little more than the minimum. They insisted upon 12-foot doors which were made specially, instead of standard ten-foot doors.

There are other advantages beside low cost. One of them is the elapsed time of construction. Once the Conover brothers had graded the property and the builder moved in, it was only three weeks before the entire building was up. A week later, it was completed with installation of the doors.

One of the major advantages of the building is that it easily meets the stringent building codes found in some areas. With major poles sunk well below the frost line, the garage is one of the most solid buildings in the area.

Less tangible but nevertheless an advantage for the small operator is that the garage becomes his headquarters. While not plush, the front office of the Conover brothers' garage is conducive to business talks. And it has the equipment needed for the normal business routine.

Bill Conover admits the garage is not without its drawbacks. His major gripe is not about its construction, but its dimensions.

At the time the building was put up, the distance of 26 feet between the two rows of the main poles seemed adequate for two buses abreast. The third bay area offered more than enough width. A 96-inch bus parked there has more than a foot clearance on either side.

But the Conovers have found that they could have easily taken a foot away from the third bay and used it to better advantage in the center area.

But despite its drawbacks, the building has definite advantages which the Conover brothers feel far outweigh them. Maintenance of the building is almost nil. That's why aluminum was used as the siding. It costs less, too.

A corrugated steel building, measuring the same, would have cost the Conovers approximately the same amount. But it would have been delivered knocked down. To arrive at an actual cost, you'd have to add cost of labor, probably half as much again as material alone.

For other small bus operators—school and even carrier operations which have a storage problem—the garage erected by the Conovers could have interesting and intriguing possibilities.

Its low cost . . . its utility , , , its versatility . . . its ease of construction—all these are features which are hard to duplicate with any other form of garage construction now available.

As far as the Conover brothers are concerned, it's one of the best investments they've ever made.

ROCKWELL

ELECTRIC FARE REGISTERS

Measure your revenue ... Protect your Profits

A TYPE TO FIT ANY AUDITING SYSTEM

Made in two models—the locked vault type (shown) and the type which returns coins to driver after registration. Both machines total pennies, nickels, dimes and quarters on a single cash counter. Two sizes of tokens register in units on separate counters. Newly designed, wide angle inspection area provides utmost visibility. Mutilated coins and foreign objects are automatically trapped and rejected. Precision made, fully guaranteed. *Write for literature.*

Manufactured by
ROCKWELL MANUFACTURING COMPANY
Register Division Pittsburgh 8, Pa.

Nationally Distributed by
John D. McGuigan
616 So. Michigan Ave. Chicago 5, Ill.

What Gives...

On the Baker Direct Drive Cam?

ANSWER: Plenty! The illustration at right shows the Cam Carrier and the Baker Direct Drive Cam which now provides a new, synchronized, positive action performance to insure smooth, effortless engagement in direct drive even while going down hill.

QUESTION: How does it differ from the standard units in Spicer Torque Converters?

ANSWER: In the Baker design the balking teeth are off set an additional ⅛ inch—thereby eliminating coast balk, and what is more important, provide twice the area in the balk position.

QUESTION: Will this design stand up to the added wear of more positive engagement?

ANSWER: Definitely, yes. Because the new location of the balk teeth more than doubles the Direct Drive Balk shoulder area, absorbs impacts during shift cycles without chipping or rounding of corners. Converter removals become a rarity with the Baker Direct Drive Cam.

QUESTION: How soon can we get one for test purposes?

ANSWER: Immediate shipments for trial installation can be made. You owe it to more dependable operation—less down time to get ALL the facts TODAY.

Write for data sheets on this and other Baker Heavy Duty Replacement Parts

Baker MANUFACTURING COMPANY
MARINE CITY, MICHIGAN

MOTO GARD WILL HELP YOU CUT REPAIR BILLS REDUCE ROAD FAILURES

A Moto Gard installed on your vehicle will protect your motor against damage from an oil failure or overheating. It automatically stops the motor ahead of any damage if the oil pressure runs too low or the motor gets too hot. Moto Gard is guaranteed to work satisfactory or your money back.

REASONABLY PRICED . . . EASILY INSTALLED

Full Information on Request

"Don't Buy Motors—Buy Moto-Gard"

THE MOTO-GARD COMPANY

Box 2425

Raleigh, North Carolina

WHAT'S NEW

Continued from page 41

Start Pilot . . .

. . . featuring a permanently installed device which provides quick starting for all gasoline and diesel engines is available.

The unit injects a small quantity of ignition-promoting fluid as a fine spray, mixed with air, into the engine intake manifold. This supplies quick starts, even at temperatures as low as —60 deg. F . . . saves engine wear and lengthens battery life . . . keeps the engine firing until the regular fuel source can sustain combustion, according to the maker.

The Start Pilot unit uses a special low ether content blend of Sure Fire motor starting fluid packed in hermetically sealed capsules which can be stored indefinitely without deterioration . . . ready for immediate use. *Wilco Co., 4425 Bandini Blvd., Los Angeles, Calif.*

Moly-Sulfide in chassis greases . . .

. . . is described in a new eight page bulletin. The bulletin explains how the lubricant additive functions in chassis grease and details its properties and current technological status. Moly-Sulfide, it is explained in the bulletin, functions by depositing out of the grease in a thin film that adheres tenaciously to the steel in the part being lubricated. When the grease is washed or wiped out of the bearing under normal or abnormal driving conditions, this film of Moly-Sulfide is present as the "second line of defense" to keep the bearing surfaces lubricated until the grease film is restored. *Climax Molybdenum Co., 500 Fifth Avenue, New York 36, N.Y.*

Continued on page 62

THIS MAN IS A JOINT SPECIALIST

...he is one of many DANA engineers who will help design a better product for you through the use of Spicer Universal Joints!

The first successful, mass produced universal joint was introduced by Clarence W. Spicer in 1904. Since that time, many millions of Spicer Universal Joints and Propeller Shafts have been produced for use in airplanes, ships, railroads, industrial machinery, automobiles, trucks, buses, tractors and a wide range of other power-transmission applications.

DANA can help you adapt stock Spicer Universal Joints to your particular needs.

DANA can help you by developing specialized Spicer Universal Joints to solve any unusual problems.

DANA can help you with a corps of designers and engineers offering unusual power transmission knowledge and experience.

DANA has ten modern plants for efficient production in strategic locations. Write for booklet describing DANA facilities, and ask us to consult with you on power transmission problems.

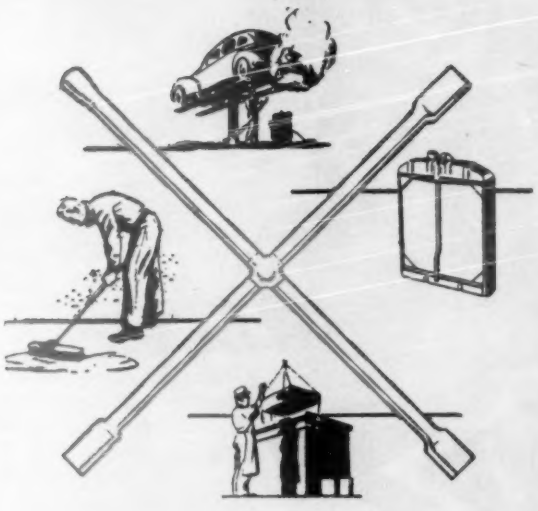
DANA CORPORATION • Toledo 1, Ohio

SPICER PRODUCTS: Transmissions, Universal Joints, Propeller Shafts, Torque Converters, Axles, Gear Boxes, Power Take-Offs, Power Take-Off Joints, Rail Car Drives, Railway Generator Drives, Stampings, Spicer and Auburn Clutches, Parish Frames, Spicer Frames, Forgings. Universal Joints also Manufactured in Canada by Hayes Steel Products Limited, Merritton, Ontario.

Spicer

Experience in Engineering *Ability in Manufacturing*

OAKITE PENETRANT®



. . . 4 way cleaner

Like the 4-way lug wrench—so popular because this one tool fits all the usual size lugs—Oakite Penetrant has four-in-one versatility when it comes to cleaning in garages and repair shops.

A single drum of Oakite Penetrant gives you the all-'round cleaning ability ordinarily requiring four separate drums. Here's what it does.

1 **CHASSIS AND MOTORS: wets, penetrates, breaks up heavy, greasy road sludge.**

2 **COOLING SYSTEMS: floats out muck, grease. Improves engine performance.**

3 **REPAIR PARTS: removes dirt and grease. Speeds inspection and repair.**

4 **FLOORS, PITS, LIFT AREAS: loosens even toughest grease deposits. Makes for safe walking.**

And just as the 4-way wrench does a better job than the old-style single type—because an "assist" is built into its design—Oakite Penetrant does a superior job whether used on chassis, cooling system, parts or floors. The big assist, with Oakite Penetrant, is the scientific blending of the best-acting ingredients.

To say nothing of the assist your local Oakite man will be glad to give you on any of your cleaning problems. Call him, or write for booklet on automotive cleaning. Oakite Products, Inc., 40B Rector St., New York 6, N. Y.

Export Division
Cable Address: Oakite

OAKITE

Technical Service Representatives in Principal Cities of U. S. and Canada

WHAT'S NEW

Continued from page 60

Bead expander . . .

. . . for heavy tubeless tires up to 12-24,5 has been announced.

This new bead expander consists of a high grade rubber tube, reinforced on the outside by longitudinal cords to provide maximum inward expansion, and equipped with an extra strong nylon strap and airplane type safety buckle. One man can put it on and operate it with the mounted tire on the floor, a tire machine or on a vehicle.

A combination valve that opens and closes by a twist of the wrist makes inflating and deflating fast and easy. Full circle compression is said to be powerful enough to seat the beads of the stiffest tire quickly and safely. *Bishman Mfg. Company, Osseo, Minn.*

New check valve . . .

. . . for air brake systems is now on the market.

The development of the check valve is said to positively preserve reservoir air pressure in air brake systems in the vent of a broken or leaking connecting line between the reservoir and the compressor.

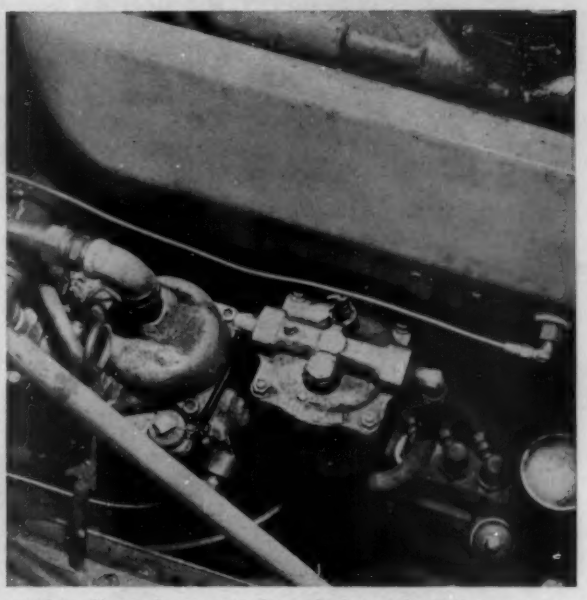
The valve is based on an entirely new principle of design. The valve disc is 66 percent balanced and the valve has a straight air flow passageway. In addition, the valve contains a molded nylon spindle that will outwear brass five times, according to

Continued on page 64

The Engineer's Field Report

CASE HISTORY
PRODUCT Chevron Pressure Primer System
FIRM Consolidated Freightways Inc., Portland, Oregon

Pressure Primer System starts diesels on 1st or 2nd turn with regular batteries—at minus 40°



BELOW ZERO starting temperatures are common 5 months a year for Consolidated Freightways equipment operating in Mountain and Plain States. Two hundred and forty-four of the company's tractors are equipped with the Chevron Pressure Primer System. Since this installation, rigs start on first or second turn at 40° below zero—using regular equipment batteries! Normally in these sub-zero temperatures, regular batteries give out after about 4 turns. Sure starts plus the fact engines are primed with Chevron Pressure Primer bulbs, controlled from within the cab, saves Consolidated Freightways important man-hours and speeds operating schedules. Picture above (left) shows a Chevron Pressure Primer Discharger mounted on steering column. Highly volatile priming fuel is atomized through tubing into manifold (right) under 250 lbs. pressure.

FREE FOLDER tells you more about Chevron Pressure Primer System and how to install it on different engines. Write or ask for it today.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor, write or call any of the companies listed below.

CHEVRON

TRADEMARK "CHEVRON" REG. U. S. PAT. OFF.

Why Chevron Pressure Primer System helps starting

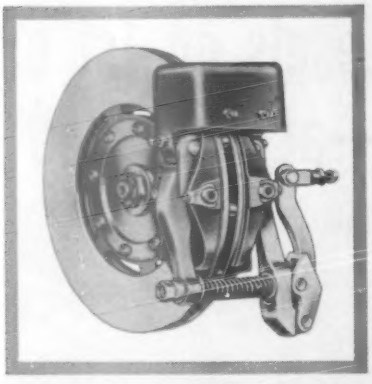
Volatile Chevron Priming Fuel atomizes in induction system at temperatures as low as -65°F. Pressure or weakest spark from engine fires mixture.

Simple, rugged discharger prevents fuel leakage. Small, safe steel bulbs protect fuel from water and dirt.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado

an ACCO product

WHY
Tru-Stop Brakes
WILL OUT-PERFORM AND OUT-LAST OTHER TYPES



These Brakes Run "Cool"

• The picture shows how TRU-STOP BRAKE discs are exposed to air for fast heat release.

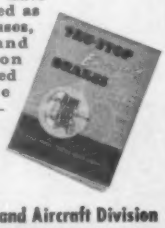
"Cool" operation assures maximum braking efficiency for *Emergency Service* (no runaway accidents) and for *Auxiliary Service* (as a truly effective supplement to service brakes for those long down hill runs). It will pay you to specify TRU-STOP brakes.

Give Uniform Pressure

• Pressure is uniform over entire brake lining with fast release of heat. TRU-STOPS give effective braking, with smooth stops (no self-energizing)—provide long lining life and consequent Minimum Maintenance.

TRU-STOP Brakes have long been recognized as outstanding for buses, trucks, tractors and other construction equipment. Provided in 2- or 4-shoe models. Disc sizes—11" to 16".

Write for booklet



ACCO
Automotive and Aircraft Division
AMERICAN CHAIN & CABLE

TRADE MARK

501 Stephenson Bldg., Detroit 2
2216 South Garfield Ave., Los Angeles 22 • Bridgeport 2, Conn.

WHAT'S NEW

Continued from page 62

the maker. *George Manufacturing Co., 10-16 Harvey St., Philadelphia 44, Pa.*

Air-operated tire spreader . . .

. . . that is said to be capable of quickly spreading any automotive tire up to 12.00 x 24 inch in size is available.

The damaged section of the tire is brought upward for repair to allow maximum room for use of scarfing or buffing tools. The saddle of the unit is equipped with rollers, which allow for revolving the tire instead of lifting it for each position change.

Spreader arms of the 910-A are designed to hold against the inside of the tire. When its elevator moves upward, these arms are pulled outward, turning the tire almost inside out without damage to, or cracking of, the carcass. Foot controls govern operation of the elevator, leaving the mechanic's hands free to handle the tire. *Manley Div., American Chain & Cable Co., York, Pa.*

RPM automotive grease . . .

. . . designed for faster, simpler and cleaner loading of grease guns has been developed.

Looking more like a retail butcher's item than a petroleum product, the cartridge is produced in a modified sausage packaging machine which applies metal grommet closures to both ends of the package.

When loading, the contents of the package can be stripped directly into the gun barrel or the entire sausage may be inserted in the gun. With the latter system the top of the cartridge is punctured or cut off, the head of the gun is replaced, and the unit is ready for lubing. *Standard Oil Company of California, 225 Bush St., San Francisco 20, Calif.*

Mechanic's black light . . .

. . . is designed to trace oil leaks to either the automatic transmission housing or the crank case with little difficulty.

A quick check of the fluorescent color of the area from which the oil is dripping against the dipstick drawn from the engine and transmission oil reservoirs will identify the offending source.

For cases where the fluorescence of oil from the crankcase and automatic transmission is indistinguishable, the manufacturer has available a fluorescent oil additive, Oilglow #21, which can be mixed with engine oil to give it a distinctive reddish-yellow fluorescence. *Black Light Corp. of America, San Gabriel, Calif.*

Exhaust gas tester . . .

. . . that is said to simplify accurate adjustment of carburetor at all speeds is now available.

The test element is located in the tester proper to insure maximum protection . . . there's no chance of damage from falling off the tail pipe. Pick-up tube slips into tail pipe and is held in place with spring clamp. A 12-foot neoprene hose is simply replaced when worn out or damaged.

Large, easy-to-read, four-color dial is marked for road test and idle and color zoned for performance readings. Readings are direct and continuous in percent of combustion and air-fuel ratio. *Harvey E. Hanson Co., Dept. BTN, Lake Boulevard and Commercial St., Paw Paw, Mich.*

Alkaline rust remover . . .

. . . in one easy dip and rinse operation has been announced.

The powdered compound is said to eliminate four of the six steps required for rust and paint removal by conventional methods. The remover contains no cyanide compounds. It neither requires complicated electro-

Continued on page 67

ONE OF A SERIES

You Get Many Benefits
By Specifying VICKERS Hydraulics

Reduced Maintenance Costs

Vickers Oil Hydraulic Equipment is built to minimize maintenance . . . has an outstanding performance record. Nevertheless, Vickers recognizes that sooner or later any piece of machinery requires overhaul. So we have developed a service department of exceptional efficiency . . . one that is convenient for you by reason of full time factory-trained service men working out of our offices from coast to coast.

Shown below are several of the practical aids provided to assure you quick and economical service on Vickers Hydraulics.

VICKERS INCORPORATED
DIVISION OF SPERRY RAND CORPORATION
ADMINISTRATIVE and ENGINEERING CENTER
Department 1408 • Detroit 32, Michigan
Application Engineering offices:
ATLANTA • CHICAGO • CINCINNATI • CLEVELAND
DETROIT • GRAND RAPIDS • HOUSTON • LOS ANGELES AREA (El Segundo) • MINNEAPOLIS • NEW YORK AREA (Summit, N. J.) • PHILADELPHIA AREA (Media) • PITTSBURGH AREA (Mt. Lebanon) • PORTLAND, ORE. • ROCHESTER • ROCKFORD • SAN FRANCISCO AREA (Berkeley) • SEATTLE • ST. LOUIS • TULSA
WASHINGTON • WORCESTER
IN CANADA: Vickers-Sperry of Canada, Ltd., Toronto

SPARE PARTS RECOMMENDATIONS

Our service men will study your situation and make practical recommendations on your spare parts inventory . . . will check your inventory and provide you with printed lists of parts usually required.

SERVICE KITS

Packaged repair kits for many Vickers products are available. These provide all needed parts for quick repair in the field and at minimum cost. In addition, these kits simplify stock problems by reducing the number of loose parts.

PREVENTIVE MAINTENANCE

Our service men will gladly set up for you an effective program of preventive maintenance on a timetable basis. This avoids costly down time and keeps maintenance costs at a minimum.

SERVICE SCHOOL

Vickers maintains a Hydraulics Training School for engineering, maintenance and service personnel of both original equipment manufacturers and their customers. For further information, please contact Product Service Department directly.

7143

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

Maintenance Problems Licked

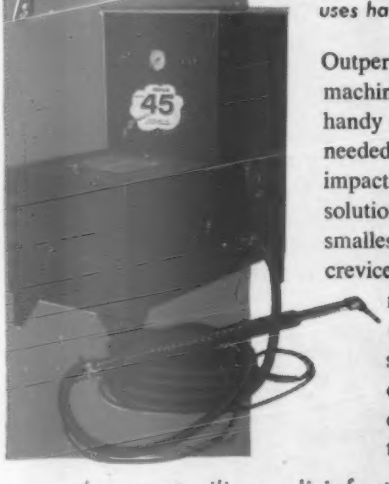
at new low cost

VAPOR MODEL 45 UPGRADER JR. STEAM CLEANER

the most economical unit on the market!

low, low initial cost . . .
only $359 f.o.b. factory

low, low operating cost . . .
uses half as much fuel.



Outperforms big, costly machines where a handy steam cleaner is needed. Pressure impact of hot cleaning solution penetrates smallest cracks and crevices. Permanent mount or (optional at small additional cost) portable on rubber tire wheels.

cleans, sterilizes, disinfects, heats, sprays . . . practically anything!

Vapor Heating Corporation
80 East Jackson Boulevard, Chicago 4, Illinois, Dept. L-6
Send me bulletin No. 442 containing full details about the new Vapor "45" Steam Cleaner.

Name_____ Position_____
Company_____
Address_____
City_____ State_____

IN THE PUBLIC EYE the NEW GREYHOUND UNIFORM

DESIGNED BY MAIER-LAVATY

Exclusive—light grey gabardine, in civilian styling, without fancy pockets, or superfluous embellishments.

Highly acclaimed by the general public.

Originators and designers of uniforms for Greyhound . . . Consolidated Bus Lines . . . National Trailways, and many other operations.

Style Book and samples on request.

Maier-Lavaty COMPANY UNIFORMS

315 S. Peoria St., Dept. B-T, Chicago 7, Ill.

WHAT'S NEW

Continued from page 64

lyte equipment nor emits corrosive fumes and will not affect dimensional tolerances or cause hydrogen embrittlement. *Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, California.*

Power-trim rams . . .

. . . said to increase speed, power and efficiency are now available.

The ram body has been reinforced with ribs providing additional strength to take the tremendous pressures developed. Solid construction between the cylinder also strengthens each unit and a new, heavier, lower frame bracket permits more flexibility in mounting the ram.

A new four spring mechanism provides faster and more positive retract action. Both the piston and the piston seals have been redesigned to offer greater efficiency and longer life. *Owatonna Tool Co., 339 Cedar St., Owatonna, Minn.*

Powerlite timing device . . .

. . . that will help mechanics adjust automotive engines to the correct firing point in about one-tenth of the time required by hand operations is now on the market.

Old methods require turning the engine over by hand to align the timing marks, then adjusting the distributor. The Powerlite does the job stroboscopically while the engine runs. Thus, any errors of blacklash between distributor and the engine crankshaft are compensated for.

Inside of the light weight case is an amplifying power pack that energizes a flasher bulb to provide an intense blue-white beam at the proper instant. *King Electric Equipment Company, 9123 Inman Avenue, Cleveland 5, Ohio.*

Engine preheater . . .

. . . designed to eliminate schedule fouling due to cold weather freeze-ups and hard starting is now being offered.

Available in two models, the unit is quickly installed on any liquid-cooled engine by connecting to the block drain.

Engineered to give quick and easy starting in below-zero temperatures, the Zero-Start incorporates a new improved extruded type, heavy capacity element which assures rapid warmup and extremely long life, according to the maker. The engine heater operates off any 15 v ac/dc current supply and is rated at 850 (standard) and 1300 (heavy-duty) watts. *Phillips Mfg. Co., Dept. K P, 2816 Aldrich Ave., Minneapolis, Minn.*

Dry chemical piped fire system . . .

. . . for flammable liquid, electrical and textile fire hazards has been developed.

The 30-lb piped system (PS-30) can be operated either automatically or manually. It is intended primarily for protection against medium-sized hazards. The extinguisher consists of a 30-lb capacity dry chemical unit installed near the hazard and serving as a storage tank for the dry chemical.

Continued on page 68

NEW Precision made parts are necessary to restore worn shock absorbers to guaranteed dependable performance.

Practical economy-wise maintenance men are taking advantage of our fast reliable service.

All new parts are manufactured by us to obtain the high standards we employ in remanufacturing your shock absorbers. Precision assembling assures dependable performance. We are completely equipped and qualified by experience to render the prompt service you need. Send your worn shocks to us and save dollars.

National Transport Supply, Inc.

SHOCK ABSORBER, STARTER DRIVE AND WATER PUMP SERVICE

582 E. WARREN DETROIT, MICHIGAN

WHAT'S NEW

Continued from page 67

A special CO_2 gas pressure cartridge furnishes pressure to expel the dry chemical onto the fire through piping connecting the dry chemical unit with the hazard area.

Automatic operation occurs when heat of a fire causes a fusible metal link located above the hazard to part. The impulse is transmitted to the release mechanism located at the dry chemical unit. *Ansul Chemical Co., Marinette, Wisc.*

Motor analyzer . . .

. . . and test equipment contained in a compact rolling cabinet is now being offered.

It includes the test units required to test the complete ignition, electrical, compression, fuel and combustion systems in a vehicle, including voltage and current regulator, generator, ignition timing, distributor, combustion, compression, vacuum, cam angle, and engine RPM.

It can be rolled about easily, on large caster-type wheels. DeLuxe and standard models are available. *Allen Electric & Equipment Co., 2101 N. Pitcher St. Kalamazoo, Mich.*

Two new Flo Test machines . . .

. . . designated as model No. 25 and model No. 35 have been announced.

Model 25 is designed for the smaller shop and is built in a new smaller size. Model 35 is practically a duplicate of model 25 except for its larger size.

Both models feature a new streamlined design, new instant acting hand lever control, new big centrally located easily-visible gage, and new angle hose-connection. The hand lever can be operated many times faster than the former screw-type control, and with complete accuracy, according to the manufacturer. The gage has been re-positioned so the rate of flow is more visible. In writing to the firm for more details state whether or not you operate a radiator department. *Inland Mfg. Co., 1108 Jackson St., Omaha 2, Nebr.*

MARCH OF DIMES

FIGHT INFANTILE PARALYSIS

JANUARY 2-31

PROTECT REVENUE with Allocated* METAL FARE TOKENS

Ideal for multi-fare and fractional fare systems. Attract riders. Speed fare handling. Eliminate change-making delays. Assure accurate sorting, counting and wrapping by maintenance of identical size. An investment . . . not an expense, for they wear indefinitely.

* Allocated . . . an exclusive M & W method of manufacturing metal fare tokens individually designed for each customer. Perforations and lettering are in the same relative aligned position on every token which makes them identical, thus protecting against duplication. This is especially important with no Federal law protection.

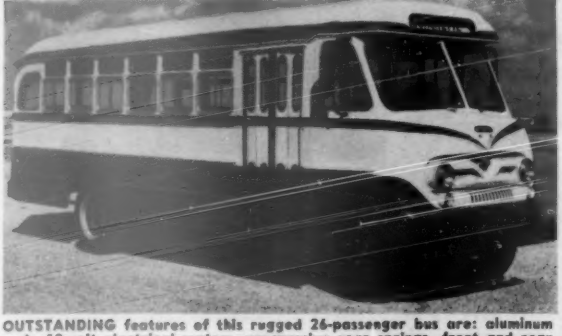
Established 1854

TRANSPORTATION DIVISION

MEYER & WENTHE, Inc.

30 S. Jefferson St., Chicago 6, Ill.

America's most popular small motor coach!



OUTSTANDING features of this rugged 26-passenger bus are: aluminum sash, 12-volt electrical system, progressive rear springs, front and rear shock absorbers, and a choice of three or four speed or automatic transmission.

COACHETTE for PROFIT

Operators from coast to coast are turning to Coachette. A few of the reasons are economy, service and eye appeal.

FOR MORE INFORMATION CONTACT

THE COACHETTE COMPANY

11844 East Northwest Highway, Dallas, 18, Texas

New Literature

Heavy-duty transmissions . . .

. . . their operation, lubrication, maintenance, parts inspection and trouble shooting is the subject of a new 24-page booklet.

Both preventive and general maintenance are described for any combination of abusive operational practices, faulty lubrication, and wear which is the result of long service. Helpful tips are given on operational and lubrication practices, and on maintenance and inspection points. The book is available by asking for "Form No. 102." *Fuller Manufacturing Co., Kalamazoo, Mich.*

Industrial presses . . .

. . . are fully illustrated in a new 16-page bulletin. Designated DH-486, it is principally devoted to Manley's line of hydraulic and air-operated industrial presses of 25 to 150 ton capacity. A total of 10 different models for varied industrial requirements are featured.

Detailed specifications, capabilities, capacities and accessories have been incorporated in clear and concise tabular form together with photographs and outline drawings. Detailed information is also included on the company's three-ton capacity arbor presses, the two-ton capacity mobile floor crane, two 2-ton capacity mobile floor trestles and a two-ton capacity universal floor crane. *Manley Div., American Chain & Cable Co., Inc., York, Pa.*

New Shelving catalog . . .

. . . gives tips on how to plan installations and order shelving in more than 1,000 combinations to fit any storage or supply-handling needs.

Drawings of basic units and accessories, suggested floor plans, a shelf-capacity chart and photographs of completed units make the catalog a useful guide to planned storage. *Hallowell Div., Standard Pressed Steel Co., Jenkintown, Pa.*

Engine bearing manual . . .

. . . has been prepared to serve as a guide and source of reference data covering the maintenance and service of automotive engine bearings.

The manual deals with performance analysis, maintenance, service, bearing types, selection and installation as well as other related subjects. A copy of this 100-page manual can be obtained from the *Clevite Service, 6545 Carnegie Ave., Cleveland.*

MONTREAL TRANSPORTATION COMMISSION

CONTINUOUS BUSINESS PLACED WITH ROSS AND WHITE COMPANY AS SHOWN BELOW.

ONE BLACKHALL WASHER 1941
ONE BLACKHALL WASHER 1943
ONE BLACKHALL WASHER 1946
ONE BLACKHALL WASHER 1952
ONE BLACKHALL WASHER 1954
FIVE BLACKHALL WASHERS 1955 (IN ONE ORDER)
SIX BLACKHALL WASHERS 1956 (In ONE ORDER)

SIXTEEN IN ALL

—ALSO—

ONE BUCK CYCLONE CLEANER 1954
FIVE BUCK CYCLONE CLEANERS 1955
SIX BUCK CYCLONE CLEANERS 1956

MANUFACTURED EXCLUSIVELY BY
ROSS AND WHITE COMPANY.
CHICAGO DAILY NEWS BUILDING, CHICAGO 6, ILLINOIS

Bacharach
DIESEL FUEL PUMP
Calibrating Stand

FOR TESTING
Bosch • Caterpillar • CAV
Cummins • Int. Harvester Pumps
All other Multi-Plunger and Distributer Type Pumps

- 3 Hp, 220 Volt Motor. Speed Range 150-4000 R.P.M.
- Vari-Speed Belt Drive featuring "step-less" speed change.
- Double-End Drive. Pumps may be driven from either left or right.
- Bank of 8 Graduates swivel-mounted for quick, convenient emptying by rotating lever.
- Push-Button Control automatically deflects fuel into graduates for preset number of revolutions.
- Fuel supplied from built-in reservoir by motor-driven pump. Two replaceable cartridge filters.

$1,800.00
Pump mounting brackets, test nozzles, fuel lines, etc.—not included in above price—may be ordered individually or in complete sets to handle all makes of pumps or any particular line of pumps. Standard accessory sets priced as low as $162.20

Mail Coupon For **FREE** Service Manual

Keeping Diesel Fuel Injection Pumps on the Road BUL. 697

BACHARACH INDUSTRIAL INSTRUMENT COMPANY
7301 Penn Ave., Pittsburgh 8, Pa.
☐ Send me FREE copy of your Service Manual Bul. 697
☐ Send me Product Bulletin 695 on the Fuel Pump Stand

NAME
COMPANY
STREET
CITY & STATE
CS-192

REBORE CONNECTING RODS IN YOUR OWN SHOP

New
GREENLEE
HYDRO-BORER
Assures precise alignment.
Accurate to .0003" T.I.R.
Fast precision boring.

Quick, easy setups.
For any size rods.
A money-maker in every engine shop.

WRITE FOR COMPLETE INFORMATION

GREENLEE
GREENLEE BROS. & CO.
2192 MASON AVENUE
Rockford, Illinois

WHERE TO BUY

Specialties and services for economical operation and maintenance of buses

BUS AGENTS
U.S.A.—CANADA—ALASKA
MEXICO
SCHEDULE INFORMATION
CORRECTED MONTHLY
Russell's Official National Motor Coach Guide
$15.00 per year, 12 issues—
Published by
RUSSELL'S GUIDES, INC.
Cedar Rapids, Iowa

STOLEN FARES?

By operators "knocking down" or by passengers "stealing rides." Practical Perey Turnstile Systems efficiently get more fares.

***install* PEREY TURNSTILES**
106 EAST 41st ST., NEW YORK 17, N. Y.

CHECK

this Where To Buy section for bus equipment and accessories

THIS SECTION IS FOR MANUFACTURERS, DISTRIBUTORS AND SERVICE ORGANIZATIONS DESIRING ADVERTISING IN SPACE UNITS SMALLER THAN MINIMUM RUN OF BOOK DISPLAY SPACE.

Space is available in units from one to four inches. Every advertisement is indexed. Rates: One time insertion—$15.50 per column inch. Six time insertion—$14.00 per column inch. Twelve time insertion—$12.50 per column inch. Cash discounts—2% 10th of month following date of invoice. Invoices payable monthly. 15% discount to recognized advertising agencies.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
$1.20 a line, minimum 3 lines. To figure advance payments, count 5 average words as a line.
POSITION WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.20 a line an insertion.

INFORMATION:
BOX NUMBERS count as one additional line in undisplayed ads.
DISCOUNT of 10% if full payment is made in advance of four consecutive insertions of undisplayed ads.
EQUIPMENT WANTED OR FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED RATE:
The advertising rate is $9.50 per inch for all Business Opportunities & Equipment advertising appearing on other than a contract basis. Employment Opportunity advertising rate is $12.50 per inch.
AN ADVERTISING INCH is measured ⅞ in vertically on one column, 3 columns—30 inches—to a page. B.T.

SEND NEW ADS or Inquiries to Class. Adv. Div., of Bus Transportation, P.O. Box 12, New York 36, N. Y. January Issue Closes Dec. 20th.

REPLIES (Box No.): Address to office nearest you c/o This publication Classified Adv. Div.
NEW YORK: P. O. Box 12 (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

Position Vacant

Chief Clerk and Office Manager for Busline in Eastern section of United States—must have payroll, stock inventory, bookkeeping, and typing experience—opportunity for advancement—state age, qualifications, and salary desired. P-3388, Bus Transportation.

Business Opportunity

Wanted—City, suburban, or short haul intercity bus franchise suitable for operation by one person full time. Desire within 55 miles of Lebanon in Pennsylvania. Write BO-3590, Bus Transportation.

NEW AND USED SCHOOL BUSES

The largest selection of used SCHOOL BUSES IN WESTERN NEW YORK
Let us know your need.
HObart 3000; day or night
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